CHESTERFIELD WFA

Newsletter and Magazine issue 41

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Welcome to Issue 41 - the May 2019 Newsletter and Magazine of Chesterfield WFA.

Our speaker on Tuesday 7th May is Prof. John Beckett from Nottingham University who will discuss `The Chilwell Explosion Revisited`. This is Prof. Beckett`s First visit to WFA Chesterfield

The Branch meets at the Labour Club, Unity House, Saltergate, Chesterfield S40 1NF on the first Tuesday of each month. There is plenty of parking available on site and in the adjacent road. Access to the car park is in Tennyson Road, however, which is one way and cannot be accessed directly from Saltergate.

Grant Cullen – Branch Secretary

Western Front Association Chesterfield Branch – Meetings 2019

Meetings start at 7.30pm and take place at the Labour Club, Unity House, Saltergate, Chesterfield S40 1NF

January	8th	**Jan.8th** Branch AGM followed by a talk by **Tony Bolton** (Branch Chairman) on the key events of the first year after the Armistice.
February	5th	Making a welcome return to Chesterfield after a gap of several years is **Dr Simon Peaple** who will discuss the `**Versailles Conference of 1919**`
March	5th	A first time visitor and speaker at Chesterfield Branch will be **Stephen Barker** whose topic will be the `**Armistice 1918 and After**`
April	2nd	No stranger to the Branch **Peter Hart** will be making his annual pilgrimage to Chesterfield. His presentation will be **"Aces Falling: War Over the Trenches 1918"**
May	7th	**John Beckett** Professor of English Regional History, Faculty of Arts at the University of Nottingham -` **The Chilwell Explosion Revisited**`
June	4th	**Rob Thompson** - always a popular visitor to Chesterfield Branch. We all tend to think of recycling as a `modern` phenomenon but in **Wombles of the Western Front**- **Salvage on the Western Front**` Rob examines the work of salvage from its small beginnings at Battalion level to the creation of the giant corporation controlled by GHQ.
July	2nd	In **Dr John Bourne** we have one of the top historians of The Great War and he is going to talk about `***JRR Tolkein and the 11th Lancashire Fusiliers on the Somme***`
August	6th	**Carol Henderson** is an emerging historian making her first visit to Chesterfield, she will talk about the `***Manpower Crisis 1917-1918***`
September	3rd	Back with us for a second successive year is **Dr Graham Kemp** who will discuss `***The Impact of the economic blockade of Germany AFTER the armistice and how it led to WW2***`
October	1st	Another debutant at the Chesterfield Branch but he comes highly recommended is **Rod Arnold** who will give a naval presentation on the `***Battle of Dogger Bank - Clash of the Battlecruisers***`
November	5th	Chairman of the Lincoln Branch of the WFA, **Jonathan D`Hooghe**, will present on the ***" 7th Sherwood Foresters - The Robin Hood Rifles"***
December	3rd	Our final meeting of 2019 will be in the hands of our own **Tim Lynch** with his presentation on ***" One Hundred Years of Battlefield Tourism"***

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A Personal Note from the Chair (33)

According to an article I read the other week storms given female names are more dangerous because people do not take them as seriously as storms with male names. Leaving aside the debate over whether storms need to be named at all, we seem to have managed without knowing what to call a storm other than 'a storm' for many years, the weekend's visit of storm Hannah resulted in very strong gusts of wind as well as the rain. Saturday was of course the Western Front Association's Annual General Meeting held this year at the RAF Museum at Cosford near Telford and the wind certainly howled around the massive hangars. Tempting as it is I will resist the urge to draw an analogy between storm Hannah howling outside and the stormy meeting inside, if for no other reason that generally, despite the AGM attracting significant numbers of people who were unhappy at the way the Executive Committee had handled the sale of the Butte de Warlencourt the meeting progressed in a cordial if not exactly friendly manner.

I suppose the highlight if that is the right word of the AGM was a presentation by the Legal Officer which in answer to submitted questions set out in step by step detail exactly why his advice had been to de-risk the WFA and its Trustees by getting rid of the Butte. It transpired that for many years successive Executive Committees had tried unsuccessfully to sell or even give away this potential liability. There had been an earlier negotiation with the local authority in France to hand over the site for one Euro but negotiations collapsed. Not surprisingly when the opportunity came to dispose of the site to someone who had always shown great enthusiasm for the site, the Executive Committee felt they had to act immediately. There was very little argument that the correct decision was taken and criticism seemed to gravitate to the failure to consult Members which even the Executive Committee recognise was handled badly. The meeting seemed to end on a successful note of reconciliation called for by our new President Garry Sheffield, but I understand that social media is again humming. As a newly appointed Trustee and Executive Committee member I for one am at a loss to know what more can be done to satisfy some of those tweeters. I knew I shouldn't have volunteered there is a lot to be said for listening to old soldiers.

Tony Bolton **Branch Chair**

Secretary`s Scribbles

Welcome to issue 41 of the WFA Chesterfield Branch Newsletter and Magazine.

Tuesday next week (May 7th) sees our next meeting .

We welcome, on this his first visit to WFA Chesterfield Branch, Prof. John Beckett from Nottingham University, who will make his presentation on `The Chilwell Explosion Revisited`. The story of the explosion in 1918 at the National Shell Filling Factory, which claimed the lives of 138 people, with a further 250 injured. This will be of special interest to our Branch Vice chair, Mark Macartney as he spent part of his working life at Chilwell when working for the Ministry of Defence. I too have a bit of a connection as my father was based there during WW2.

As Tony Bolton has mentioned in his notes Saturday 27th April was the AGM of the WFA held at RAF Cosford. Tony was elected a Trustee of the WFA and joins Mark Macartney, re-elected as a Trustee, on the WFA Executive Committee . We extend best wishes to both for a successful year in office. Hopefully, now that this meeting has passed, the issue of the sale of the Butte de Warlencourt can be put behind us. Interesting that none of those who protested the loudest (particularly on social media) about this matter put their names forward for election to the EC

As noted elsewhere Chesterfield WFA Branch now has a weekly presence on Chesterfield, Retford and Worksop markets, courtesy of ex serviceman, Adrian Saitch, who has agreed to advertise our Branch and will be carrying a stock of back issues of `Stand To!` and `Bulletin`. Membership information, application forms etc will also be available, on his stall. His business is called `Blitz n` Pieces` and he carries a stock of Badges and Insignia, Books and Ephemera, Medals and Decorations, Military Pictures – Pictures, Postcards, Silks . If you are visiting any of the above mentioned markets, stop by and say `hello` to Adrian.

Thanks to Committee Member Andrew Kenning for his report on the Branch`s Book Group which has become well established. Members are welcome to come along – even if you haven`t had time to read the chosen book…….it`s always a good discussion on all things Great War !

I look forward to seeing as many of you as possible on Tuesday night – all welcome

Grant Cullen – Branch Secretary

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An introduction to our speaker for our May Branch meeting - John Beckett

John Beckett FSA FRHistS (born 1950) is a historian who has been Professor of English History at the University of Nottingham since 1990

Career and research

John was born on 12 July 1950 to William Vincent Beckett and his wife, Kathleen Amelia, *née* Reed. He completed an undergraduate degree at the University of Lancaster in 1971, which awarded him a PhD degree four years later for his thesis *Land Ownership in Cumbria, c. 1680-c. 1750*.

From 1974 to 1976, He was the Lord Adams Research Fellow at Newcastle; he then spent two years lecturing at Fairleigh Dickinson University's Banbury-based Wroxton College, and then lectured at the University of Hull for a short period before taking up a lectureship at the University of Nottingham in 1979. He was promoted to a readership in English regional history in 1987, and three years later promoted to his current professorship. John was also Director of the Victoria County History series from 2005 to 2010, and has served as chairman of a number of editorial boards, including that of the journal *Midlands History* (since 2001) and the History of Lincolnshire Committee of the Society for Lincolnshire History and Archaeology (since 1988). He has been chairman of the Thoroton Society since 1992 and chaired the British Agricultural History Society for four years from 2001. Becket is a historian of England in the eighteenth and nineteenth centuries. He is a local historian, and has studied topics relating to village life, Parliamentary enclosure and local politics, agricultural history, church history, and the history of landed estates and their owners. John was elected a Fellow of the Society of Antiquaries of London in 1992 and is also a Fellow of the Royal Historical Society as of 2018

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Blitz `n` Pieces

Prop. Adrian Saitch

Small family business trading in all our yesterdays and promoting remembrance of the heroes of the World Wars. Selling military memorabilia from both conflicts and the smaller ones. Royal British Legion member and an ex serviceman striving to keep the memories alive of the ones that fell in war.

Badges and Insignia, Books and Ephemera, Medals and Decorations, Military Pictures – Pictures, Postcards, Silks

Visit my stall at Chesterfield Market on Thursdays, Retford Market on Fridays, Worksop Market on Saturdays

07521364509

Book Group Report

The Chesterfield WFA Book Group held its fourth meeting on Tuesday 16th April at the Labour Club, Saltergate, when eight members discussed “Anzac Girls: The Extraordinary Story Of Our World War One Nurses” by Peter Rees

This was an excellent choice for the Book Group as we are trying to read a wide variety of books relating to WW1 and this title would probably have been 'passed over' many members. It also ticked the boxes of Women in the Front line’, ‘the Dominions’ and ‘Medicine’.

The book is a collection of memoirs from Australian and New Zealand nurses well recounted by Peter Rees, a political journalist. It was published in 2014 in time for the 1914 Remembrance and later chosen for an Australian TV mini series, which was also successfully shown on British TV.

The diaries and letters included stories of great courage and resilience in the face of harrowing experiences as well as some happier social times.

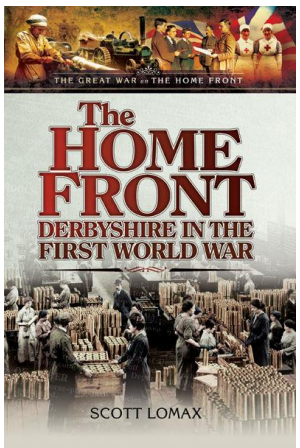
The nurses set sail believing that England would be their destination but they ended up going to Egypt to support the Australians who were sent to Gallipoli in Turkey.

Many nurses then went on the serve in England and France, where many worked and lived in temporary tents and sheds, and endured the freezing 1916-1917 winter - the coldest for a century.They worked tirelessly treating thousands of wounded soldiers, not only from Australia and New Zealand but also British, French and German.

While the main part their work were terrible injuries caused in the main part by shrapnel, they also experienced shell shock and gas injuries, as well as treating venereal disease, the dangers of U boats (10 New Zealand nurses died in the torpedoing of the troopship, Marquette) as well as the unexpected ravages of Spanish flu, which is believed originated in the USA but was nicknamed ‘Spanish’ as the newspapers widely reported the Spanish King had caught it.

Some members had problems getting a paper copy of the book due to delays by Amazon – although the book was available on Kindle.

Our next Book Group meeting will be on Tuesday 25th June, 7pm in the Chesterfield Labour Club and we will discuss **“The Home Front, Derbyshire in the First War”** by Scott Lomax

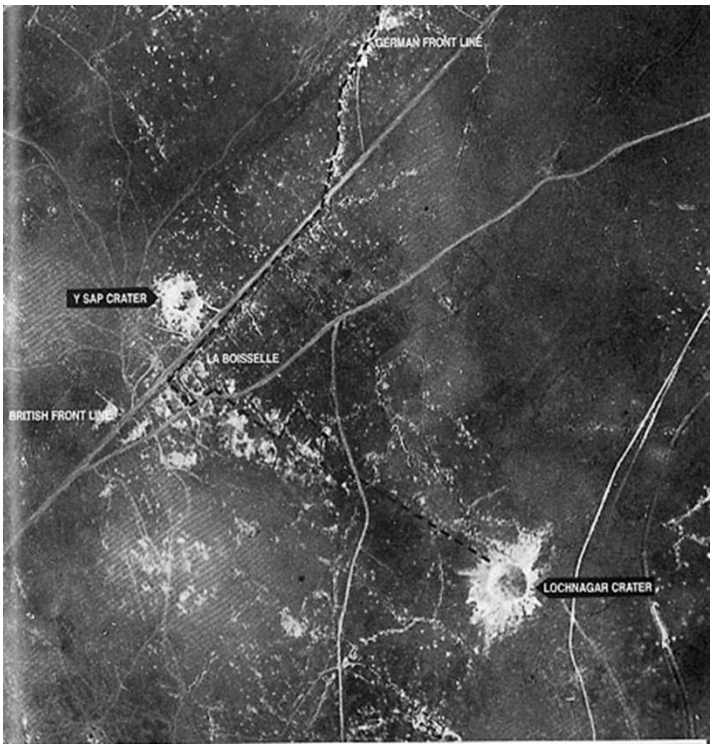


April Meeting

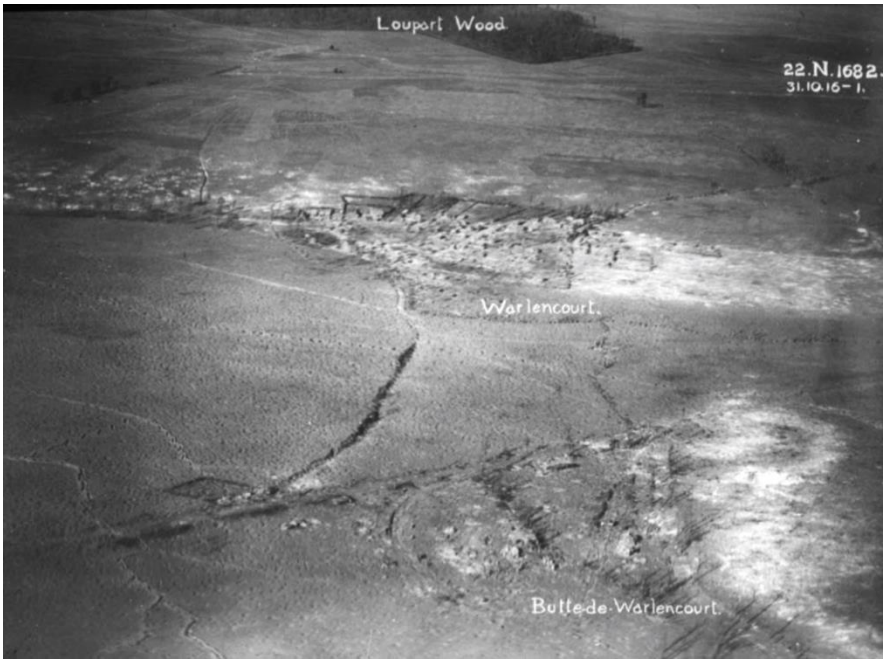
In the absence of Branch Chair, Tony Bolton, Vice Chair Mark Macartney welcomed a near full house attendance. Committee member Jon-Paul Harding spoke Binyon`s Exhortation before Mark introduced our speaker for the evening, the popular Peter Hart, a regular at Chesterfield Branch meetings since our formation in 2010. Peter, Oral Historian at the Imperial War Museum in London, for many years, said he will soon be retiring from his post at the IWM and he hoped to be able to visit Chesterfield Branch as a casual visitor on a more regular basis.

Peter opened his talk `Fall of Eagles`1918 by saying this would be the shortened version as he said he talked too much! In the beginning there was the ground war, from 1914 onwards and gradually as the war progresses they start to add the Royal Flying Corps aircraft to the mix – we already had infantry, cavalry, engineers, artillery – and don`t forget 1914 was only ten years after the first powered, manned flight. To begin with it was just case of flying across the lines, have a look, write something down and report back. Warfare is a great catalyst for change and what you have is the practical people, the commanders and you get the scientists who work out the new methods which the practical people work out how to fix things like cameras to planes. The commanders say what they want from, in this instance, aerial photography.

Aerial photo-reconnaissance began September 1914 flying above the emerging German trenches that blocked the Allied advance. Soon they were pin sharp



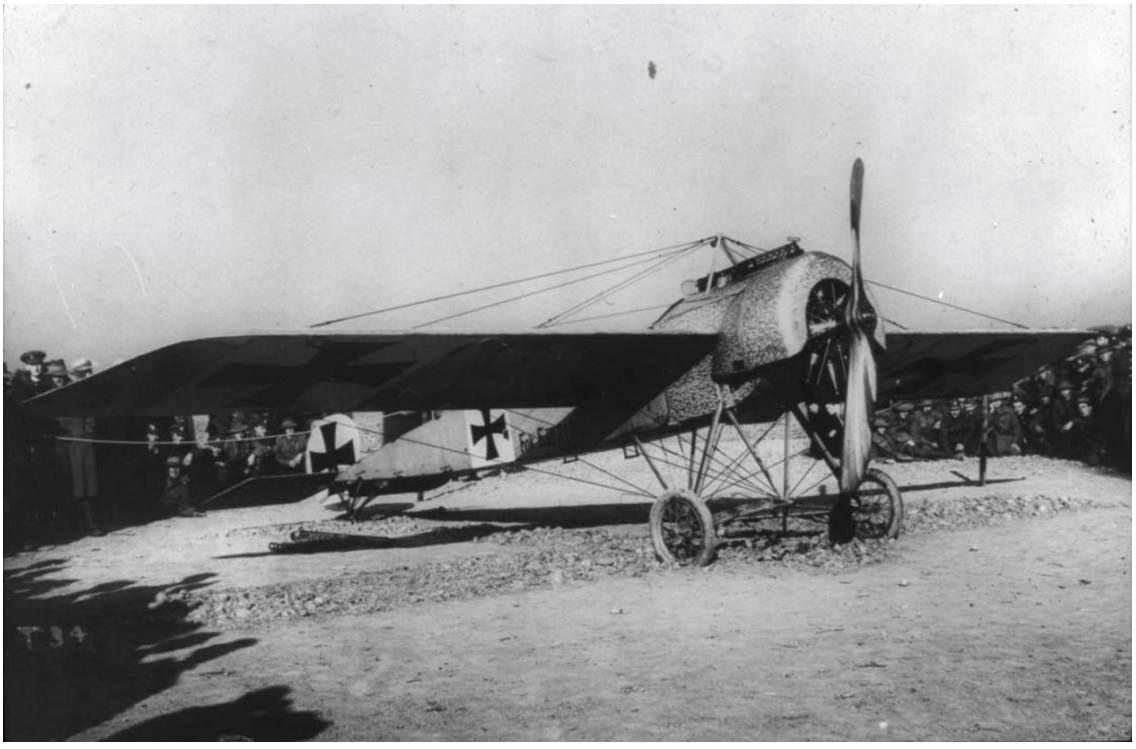
Aerial photograph – La Boisselle on the Somme



Oblique Photo

Butte de Warlencourt, Somme Area

Artillery observation experiments began to allow artillery to range onto targets invisible to their ground level forward observation posts.
Exponential improvements – science driven by war the great catalyst of change and revolution.
Bombing low bomb load and poor accuracy didn't change much till 1944!
It was inevitable that the first real 'fighter' aircraft armed with machine guns should appear as the rapid improvements in aircraft performance allowed more weight to be carried aloft. Early experimentation carrying rifles & machine guns. First classic scout was the ***Fokker Eindecker EI***



In 1915 Hugh Trenchard had been given the command of the RFC on the Western Front in August 1915. A brash, booming man who was intolerant of failure, he nevertheless had a certain panache that let him get away with statements that might seem inflammatory from a lesser man.

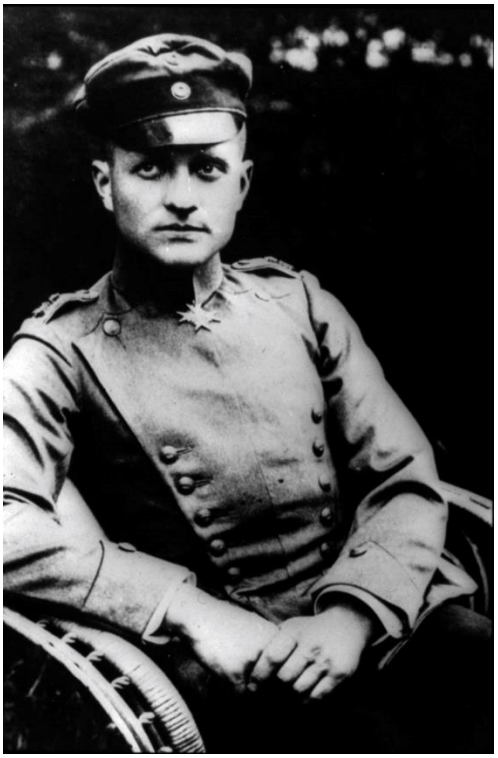
Brigadier General Hugh Trenchard, Headquarters, RFC
I'm not asking you to do anything I wouldn't do myself. Just because I'm condemned to ride about in a big Rolls-Royce and sit out the fighting in a chair, you mustn't think I don't understand.
Trenchard had developed an unswerving belief that the RFC was part of and entirely subordinate to the requirements of the army; hence they must do whatever was required and bear the inevitable losses to service those needs.
Trenchard, had developed a relentlessly offensive aerial strategy. It was a simple but effective concept of relentless scout patrols penetrating deep behind the German lines to beat back German aircraft and keep them as far as possible from the vital front line areas and accepting with equanimity the consequences of an occasional German aircraft breaking through to prey on the British army cooperation machines working above the trenches.
1918 more air fighting than the rest of the Great War put together.
In 1918 the Germans *had* to get their reconnaissance aircraft deep behind the British lines on a far more regular basis than had previously been their practice. Their scouts had to stop the RFC reconnaissance aircraft from crossing the lines to uncover the secrets of the German plans.
Once the offensive began the German aircraft would be needed more than ever for artillery observation duties, infantry contact patrols and low flying ground strafing attacks on British infantry and artillery positions. The German Air Service could no longer remain on the aerial defensive, like the RFC during 'Bloody April' of 1917 they too were at the beck and call of the ground forces.
The entire *raison d'etre* of the Royal Flying Corps had been to facilitate the British offensives launched in 1915, 1916 and 1917.
Major General Hugh Trenchard, was well aware of both the increasing strength of the German Air Service and of the radical reversal in German and British priorities in the air war.
Now new role: watch for signs of imminent attack – when and where.
The RFC was to look in particular for signs of construction of the communications and logistical infra-structure without which a major offensive was impossible: the railways and sidings, improvements to roads, the massive munitions dumps. Then there were the sign of German forces massing, the new aerodromes, the camps and the gun battery positions.

Once an offensive was clearly imminent then the duty of the RFC was clear.

Major-General Hugh Trenchard, Headquarters, RFC
As soon as it has been established that preparations for an attack are in progress behind the enemy's line, the next duty of the RFC is to interfere with them. The means available are:
a) Cooperation with our artillery
b) Extensive bombing attacks, to hinder the enemy's preparations, inflict casualties upon his troops and disturb their rest.

The primacy of their role in ensuring that the fire of the Royal Artillery was effective would naturally continue once the German infantry came over the top.
The RFC would also be required to take their place alongside the infantry in the front line attacking the Germans on the ground

So it was that in 1918 when push came to shove; ultimately even the greatest of the scout aces of both countries would find that they were expendable in the cause of their country.
An Ace was a scout pilot with 5 kills, national propaganda meant they embodied manly virtues of countries at war, they offered hope that even in the 'Great War' where slaughter was mechanised on an industrial scale; an individual hero *could* make a real difference. Their public image was one of 'knights of the air' although if these were truly paragons of virtue then they inhabited a strange new world where concepts of chivalry sat uneasily alongside the grim reality of their ruthless killing to order.
Greatest ace was **Manfred von Richthofen**



He had mastered and refined his craft until he had seemed an invincible force as he sent aircraft after aircraft tumbling from the sky during the 'Bloody April' aerial fighting that formed the grim backdrop to the Battle of Arras. But his greatness lay not only in the number of victories he himself achieved; it lay also in the inspirational effect and role as teacher.
He had been shot down in July 1917 and suffered fairly serious head injuries. Nevertheless Manfred von Richthofen endured into 1918, still blessed with a supreme combination of all the qualities required in an ace: flying skills, the eyesight, the tactical awareness, the gunnery ability and the underpinning courage; but on top of these manifest virtues he was a superb teacher who tried to inculcate the same merits in all who served with him.
His attack tactics were simple, direct and deadly. He had made his reputation in shooting down the artillery observation and photographic reconnaissance machines that were hand maidens of the Royal Artillery; the greatest and most deadly enemy of the German Army. He stalked his prey mercilessly.

Richthofen (centre) and members of Jasta 11

Rittmeister Manfred von Richthofen, Jagdgeschwader 1

I dive out of the sun at him taking into consideration the wind direction. Whoever reaches the enemy first has the privilege to shoot. The whole flight goes down with him. So called 'cover' at great altitude is a cloak for cowardice. If the first attacker has gun trouble, then it is the turn of the second, or the third and so on; two must never fire at the same time. The subject 'aerial battle technique' can be explained with one sentence, namely, "I approach the enemy from behind to within 50 metres, I aim carefully, fire and the enemy falls". This is the whole secret of aerial victory. One does not need to be a clever pilot, or a crack shot, one only needs the courage to fly in close to the enemy before opening fire.

Once the initial impact had been made, Richthofen would usually zoom back up to hang above any dogfight that ensued, from which vantage point he would intervene to rescue any of his more inexperienced pilots that had got into difficulties. He then acted as a focus to as soon as possible reassemble his formation and assess the situation
Back at their airfield Richthofen always emphasised the importance of properly debriefing using it as an opportunity to deliver a practical tutorial in scout tactics.
Richthofen had brought up a whole generation of German aces under his regime of comradeship tempered by strict discipline. His influence was increasingly all pervasive right across the German Air Service on the Western Front. Perhaps his value as a teacher and symbol meant that he should have been withdrawn from the front line. But as the great German offensive loomed, at the moment of his country's greatest crisis, Manfred von Richthofen was not a man to stand on the sidelines.

Rittmeister Manfred von Richthofen, Jagdgeschwader 1

I should consider myself a despicable creature if, now that I am loaded with fame and decorations, I should consent to live on as the pensioner of my own dignity and to preserve my valuable life for the nation, while every poor fellow in the trenches, who is doing his duty just as much as I am, has to stick it out.
In this, as for so much else, he spoke for most of the truly great aces of both sides in the Great War.
THERE was no equivalent dominating figure flying on the British side of the trenches.

Captain Albert (Alan!) Ball had provided an example of supreme courage that inspired the whole of the RFC. But Ball took no heed of the nuances of a tactical situation; he simply went for his opponents using bull-headed tactics that at heart relied on incredible luck and were simply unsustainable in the longer term. Ball was duly killed on 7 May 1917.

But by the start of 1918 one British scout pilot had begun to show some of the attributes of a 'British Richthofen', although his rise to prominence had been far more laboured. ***Captain Edward Mannock*** was born on 24 May 1887 and at 30 he was considerably older than the average pilot on either side. He was certainly not a natural ace and had great difficulty in recording his first successes. He was in many ways a nervous individual, plagued by inner doubts. Yet Mannock was deeply analytical; always thinking, always processing information. Slowly he began to develop a system of aerial tactics based on diligent preparation of men and machines, a healthy dose of restraining caution, careful stalking of his prey and the primacy of a flight formation working together as a team. His foremost aim was always to attack from the direction not expected by the enemy: usually from the east, out of the sun or bursting out of the clouds. He had one simple maxim. "Gentlemen, always above; seldom on the same level; never underneath.'

Captain James McCudden was the ultimate 'professional' air fighter. Born on 28 March 1895 in Gillingham, he had made a career of the Royal Flying Corps even before the war. He had joined as a mechanic as early as 1913, having previously enlisted as a bugler into the Royal Engineers in 1910. He had served as an engine fitter with 3 Squadron the Western Front in 1914, before he took to the air with them as an occasional observer in 1915, where he showed himself a steady man during the 'Fokker scourge'. After learning to fly back in England in 1916, he returned as a pilot, flying the FE2b with 20 Squadron, and then the single-seater DH2s with 29 Squadron. After a successful period learning his trade as a combat flyer and claiming the five victories necessary to be an ace, McCudden returned home for a stint as an instructor. McCudden returned to the fray as a flight commander with 56 Squadron in 1917. He was now the fully formed article: his natural flying talents and shooting ability augmented by an absolute attention to detail on the ground. He took every care to make sure that his engine was running smoothly, generating every possible ounce of power. His machine guns were checked and rechecked, he carefully aligned their sights and did everything possible to avoid the endemic gun jamming that plagued the British scouts. He drank little alcohol and took care to make sure that he himself was in good shape for the ordeals ahead. His eyesight was exceptional and that, combined with his long experience in the air, meant that he could almost always see his German prey well before they saw him. He would then stalk them across the skies until he could take advantage of his murderously accurate gunnery skills. His professional attitude was demonstrated in his hard pragmatic approach to the whole business of aerial warfare. He had no time for any knight errantry in the skies.

Captain James McCudden, 56 Squadron

My system was to always attack the Hun at his disadvantage if possible, and if I were attacked at my disadvantage I usually broke off the combat, for in my opinion the Hun in the air must be beaten at his own game, which is cunning. I think that the correct way to wage war is to down as many as possible of the enemy at the least risk, expense and casualties to one's own side.
The example of men like Mannock and McCudden began to replace the 'berserker' tradition hitherto espoused and demonstrated by Captain Alan Ball. It became less a matter of demonstrating courage in the face of adversity and more a logical assessment of a tactical

situation, which would then determine whether a flight commander took his pilots into action – or not.
The major aces on both sides exuded a massive power and confidence that made them seem like supermen. They were eternal figures with apparently supernatural power in combat that made them seem invulnerable to the young pilots joining their units.
Although they had apparently mastered their grim trade, many were increasingly afflicted by combat fatigue; the accumulated stresses of living a life where a single mistake could mean certain death. With the onset of the New Year in 1918, many of the very greatest of the surviving aces were clearly beginning to struggle.

Pilots reporting to Major Stammers of 15 Squadron

As the size of formations increased so the amount of routine over-claiming ballooned out to excessive proportions. The problem was no longer the lone wolf 'ace' claiming unwitnessed kills. This was the natural confusion in determining who had done what in the chaos of a dogfight.

39 Kills?

It is emphatically not that they were all part of some dishonest conspiracy. After all if the British pilots hung around to track the fall of their 'victims' right down to the ground, then they too would be shot down in an environment where every ounce of concentration was required to survive. Worse still: in concentrating on confirming their own 'kills', they could easily be accused of leaving their comrades in the lurch. It seems that some pilots claimed only when they were certain and were occasionally wrong; many pilots claimed in good faith and were often wrong; others claimed in what can euphemistically be called an optimistic frame of mind; a few, a very few were utterly fraudulent. *But all of them, one way or another, over-claimed.* It is only the actual proportion of over-claiming that is variable.
The men of the German reconnaissance and artillery observation flights were going to be exceptionally busy men over the next three months. Their armies needed to know exactly what lay beyond the next rise in the ground, invisible to observers on the ground. IT was unquestionably the role of all British scouts to prevent the incursions of the German Rumpler

and LVG reconnaissance aircraft. But in the January and February of 1918, there is no question that they greatest exponent of that art was Captain James McCudden.

His cautious tactics and stalking adroitness were simply irresistible, but his mechanical skills gained during his years as an engine fitter added a whole new dimension to the menace he posed to his adversaries. When new German models of the Rumpler and LVG reconnaissance two-seaters became virtually invulnerable to interception through their ability to fly far higher than the 19,000-20,000 feet that the SE5a could normally achieve, McCudden sought a technical solution. He acquired a set of non-standard high compression pistons, which he successfully fitted to his engine to gain a huge increase in engine performance whilst trimming every spare pound of weight from his aircraft. His extra reserves of speed and height immediately began to take effect in a series of dispassionate victories. He became not only the top-scoring British ace but reached the 50-victory milestone on 16 February.

Captain James McCudden, 56 Squadron
I saw a Hun two-seater running away east. For he had apparently seen me before I had seen him, for I was not expecting Huns over, for the visibility was not too good. But I suppose he was out for some urgent information. I now opened the throttle of the high compression Hispano and I overtook the LVG just as though he was going backwards, for I should judge my speed to be 20 miles faster level than his. I quickly got into position and although the LVG tried hard, I presented him with a very excellent burst from both guns, and then he went down in a vertical nose dive, and then past vertical onto his back. The enemy gunner shot out of the machine for all the world like a stone out of a catapult and the unfortunate rascal seemed all arms and legs

He could also now reach 21,000 feet. This however brought its own problems for at that kind of altitude the effects of the extreme cold and even worse a lack of oxygen had a considerable effect on even the hardiest of aviators such as McCudden.
It was obvious to his superiors that after seven months with 56 Squadron at the front he needed a rest sent home in early March 1918
For the Allies the multi-purpose two-seater Bristol Fighters were reaching further back to look for the tell-tale signs of the German offensive

Bristol Fighter

Issuing Lewis guns

Handing Lewis Guns to Observer

Ground crew preparing Bristol Fighter

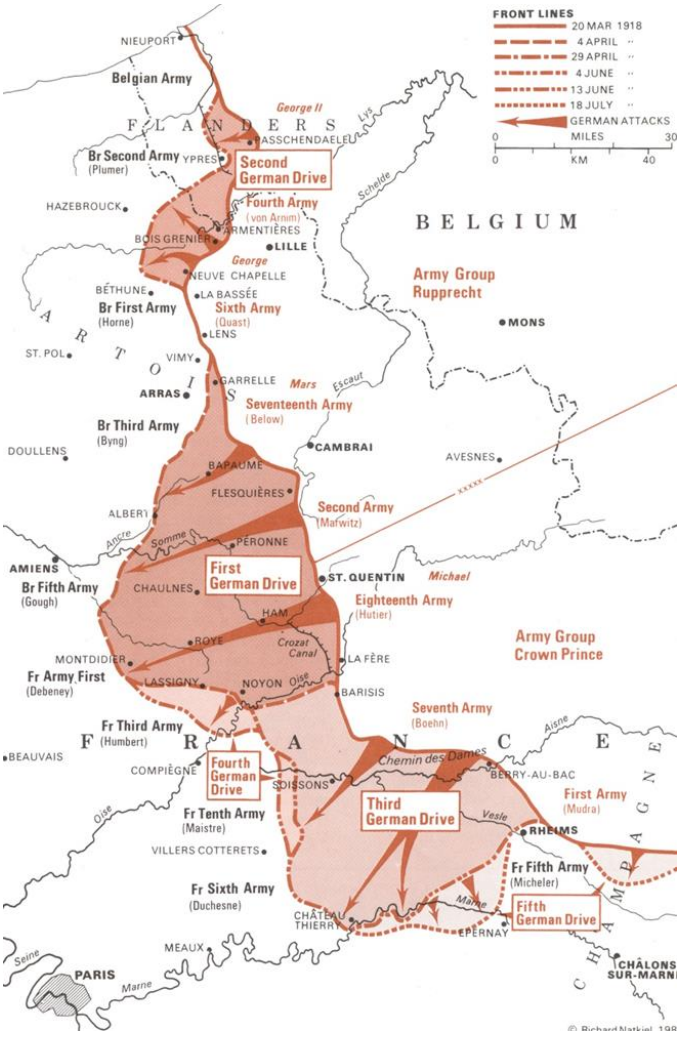
When the photographs were safely back on the ground they were pored over by the experts. To the uninitiated the black and white photographs appeared of little value but after four years of war the new science of photo-interpretation was developing fast. One accomplished practitioner was Lieutenant Thomas Hughes who had been serving in the Ypres area since 1915. An irritable man, Hughes had little time for his superiors, but would tolerate them as long as they left him in peace to carry out his specialised tasks Despite all the advances many were still sceptical of the value of aerial photographs and part of his duties lay in explaining to the uninitiated just what the RFC was accomplishing on their behalf. These sessions did not always go according to plan.

Lieutenant Thomas Hughes, 53 Squadron
I started my course of 'Interpretation of Aeroplane Photographs' this morning. There were eight infantry officers – I rather think they were battalion intelligence officers – assembled round the table in the conference room at the Corps, where Sergeant Cowley, Second Aircraftsman Ripley and I arrived with the component parts of a magic lantern. After a bit of business getting the light to work, I got under way with my celebrated lantern exhibition and was getting along quite nicely when the door behind the screen opened and the Corps Commander shuffled in, tripped over the electric light wire, put out the light and fused the arc lamp. The Corps Commander then fell over a chair and I felt it was time to pull up a blind, which I did. He then told me to carry on as if he wasn't there!
DESPITE all the German efforts, even as early as late January the RFC had located sufficient signs of German preparations that convinced Major-General John Salmond commanding the RFC that the attack would be launched in the *general* area facing the British Third and Fifth Armies between Arras and the River Serre.
THE second priority, as prescribed by Trenchard, was to launch persistent bombing raids in an effort to disrupt the German preparations. In March the bomber squadrons with their DH4s and DH9s found that their tactical role was growing in importance with every day that passed. Their duties were manifold: bombing airfields, striking at railway junctions, stations, bridges and other key components of the communications infra-structure.

Bombing Airfield

Bombing Railways

Also ammunition dumps, supply depots, high command headquarters and billeting centres were all fair game for the tumbling bombs. Together
Realistically, given the bomb loads and numbers of aircraft available to the RAF there was a limit to what they could do. Nevertheless the capacity to cause serious damage and interference was growing exponentially as the years passed and there is no doubt that, with a bit of good fortune, the bombers could slow down the reinforcement process.



Map of German Offensives

THE *Kaiserslacht,* or 'Kaiser's Battle', finally began in fog at 04.45 on 21 March 1918 when the German barrage opened up with a deluge of shells from some 6,500 guns and howitzers. The barrage was the *piece de resistance* of the German plans. The fog was roundly cursed by both sides. The fog also effectively neutralised the morning plans made by the German Air Service. The Schlachtstaffeln ground support two-seaters should have been unleashed to strafe their way across the battlefield, adding to the confusion and general mayhem, while concentrating together as required to soften up specific strongpoints. Their scout pilots were also neutralised and unable to play their allotted role.
All along the threatened front the pilots roused themselves to find there was almost nothing they could do but wait for the thick ground mist to clear.

In the north the fog began to drift away by the late morning, but the intrepid efforts by artillery observation aircraft to bring down 'Zone Call' concentrations of artillery fire on

some spectacular targets were all in Communications generally were completely haywire and many of the batteries needed for an effective barrage in response to the 'Zone Calls' were already fully engaged in firing in support of local divisions or in some cases, had simply been over-run by the fast advancing German stormtroopers. The first duty of the RFC was to support the artillery, but the artillery was in no state to be supported.
As visibility improved the scouts began to fly more and more missions. They were ordered to engage in concentrated ground strafing to engage at will the multiplicity of targets that the German offensive placed before them. Previously ground strafing had been relatively ineffective firing against troops concealed in trenches, but now everything so long concealed was right out in the open below them: the marching columns of infantry, the largely horsed transport, and the precious artillery batteries. Given such enticing targets the airmen did not stint themselves.

Sopwith Camel of 5 Squadron

Lieutenant Ewart Stock, 54 Squadron
After lunch I was ordered to lead a formation along the St Quentin-Estrees road and bomb and fire at the enemy infantry and transport. We had never undertaken this sort of 'job' before. We carried two 20lb bombs and about 800 rounds of ammunition. I led the formation along this road until we could see our infantry in action, then I dived down to 500 feet and looked for a good target. Enemy infantry were everywhere as usual, advancing in the open and in large columns on the road. I gave the sign to release the bombs when we were well over them. I dived first and released both bombs at once; they must have hit the road squarely in the centre. I could hear the explosions and see the smoke. One by one the rest of the formation followed dropping each pair of bombs and scattering the enemy. Lieutenant Ewart Stock, 54 Squadron
By nightfall it was evident that the Germans had made substantial gains that ranged from about 2,500 to 8,000 yards.
Yet Manfred von Richthofen and the men of Jagdgeschwader I were getting into their stride. For the old master it must have seemed almost like old times – he was now twenty five years old but had lived a lifetime in the dangerous skies of the Western Front. His score started to accelerate again.
Yet he felt it was his duty to risk everything ground strafing a column of British guns and marching troops on the road below them.
By the end of March the Allied line had finally coalesced beneath them on a line that stretched from just behind Albert through to Villers Bretonneux.
1st April formation of RAF
Next assault 9 April on Lees. Same again.
That April Richthofen seemed to be in his usual irresistible form.
His efforts peaked on 20 April 1918, as he claimed his seventy-ninth and eightieth victories. Richthofen seemed to be back at the peak of his powers. Perhaps he should have listened to the siren call of a training or publicity role. But he was determined to fight on. Perhaps he could reach a hundred; then perhaps he might take another rest.

The next day was the 21 April. What happened has generated countless articles, books and even television programmes - all devoted to tracking down who exactly shot Manfred von Richthofen. The issue can never be resolved but the protagonists battle on, re-fighting endlessly a skirmish that took just a couple of minutes all of ninety years ago. The reason is simple. Richthofen was an enormously potent symbol of German nationalism. He was seen as their 'knight of the air' flying out to do battle with the best the Allies could throw at him and his 'band of brothers'. Whatever happened he emerged victorious, proof of the supremacy of German manhood. Until 21 April 1918: then suddenly it was all over. How could their champion have been defeated? Who could have done it? Surely he could not have been defeated in a fair fight?
The incident started in conventional fashion. Three flights of Sopwith Camels from 209 Squadron were carrying out an offensive patrol over the Somme area when they were attacked by a formation led by Richthofen.

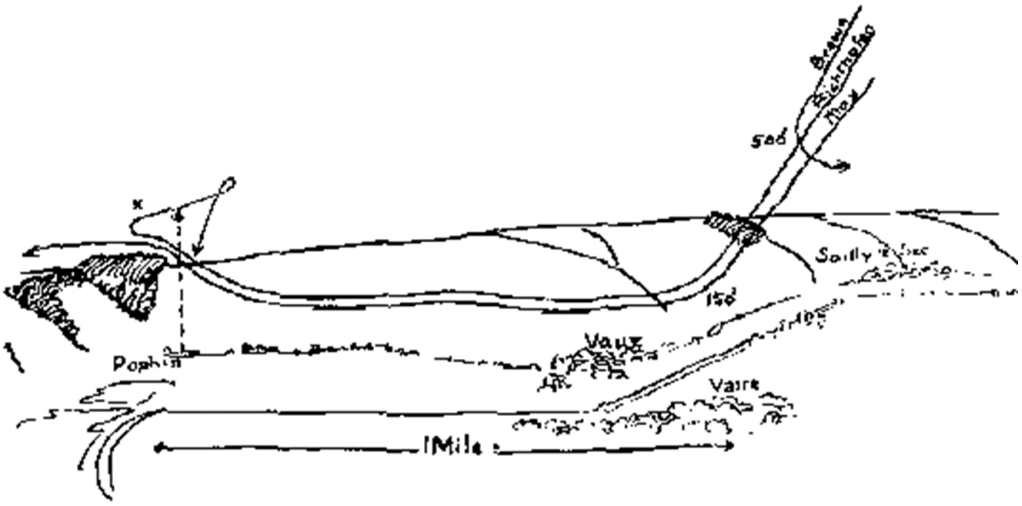
Lieutenant Wilfred May was an inexperienced pilot and he had been firmly ordered to try and stay out of such dogfights, but he was soon sucked into the fray. To him it was all a formless blur of action in which he was a next to useless makeweight.

The enemy aircraft were coming at me from all sides, I seemed to be missing some of them by inches, there seemed to be so many of them the best thing I thought to do was to go into a tight vertical turn, hold my guns open and spray as many as I could. The fight was at very close quarters; there seemed to be dozens of machines around me. Through lack of experience I held my guns open too long, one jammed and then the other. I could not clear them, so I spun out of the mess and headed west into the sun for home. After I levelled off I looked around but nobody was following me. I was patting myself on the back, feeling pretty good getting out of that scrape. This wasn't to last long, and the first thing I knew I was being fired on from the rear. I could not fight back fortunately, so all I could do was to try to dodge my attacker. I noticed it was a red Triplane, but if I had realised it was Richthofen I would have probably passed out on the spot.

As May desperately tried to get back and to shake off the red Triplane his predicament was seen by May's friend and fellow countryman,

Captain Roy Brown,(left) a practised veteran with nine victories to his credit who duly put in a burst into the red triplane and later claimed the victory.

However it is generally accepted that whatever Brown *thought* had happened Richthofen carried on pursuing May for some time after Brown had fired on him and flown off.

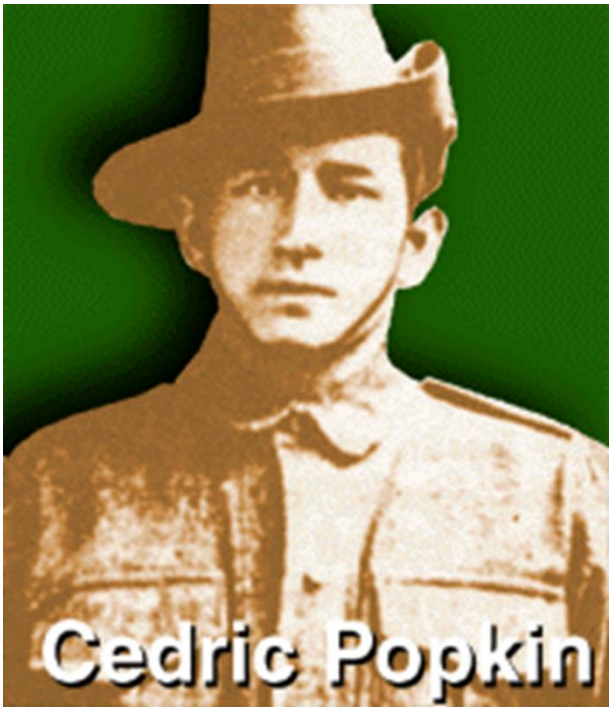


The broken line shows the direction of Sergeant Popkin's fire at the time when he himself believed he hit Richthofen. X—Point at which Richthofen was fired on by Lewis guns of 53rd Battery.

Plan of Richthofen's Last Flight

Lieutenant Wilfred May, 209 Squadron
I kept on dodging and spinning until I ran out of sky and had to hedge-hop over the ground. Richthofen was firing at me continually, the only thing that saved me was my poor flying. I didn't know what I was doing myself and I do not suppose that Richthofen could figure out what I was going to do.

The next major protagonist in this puzzling affair was a Sergeant Cedric Popkin of the 24th Australian Machine Gun Company on the ground. He opened fire from a position to the left hand side of Richthofen's flight path.



Sergeant Cedric Popkin

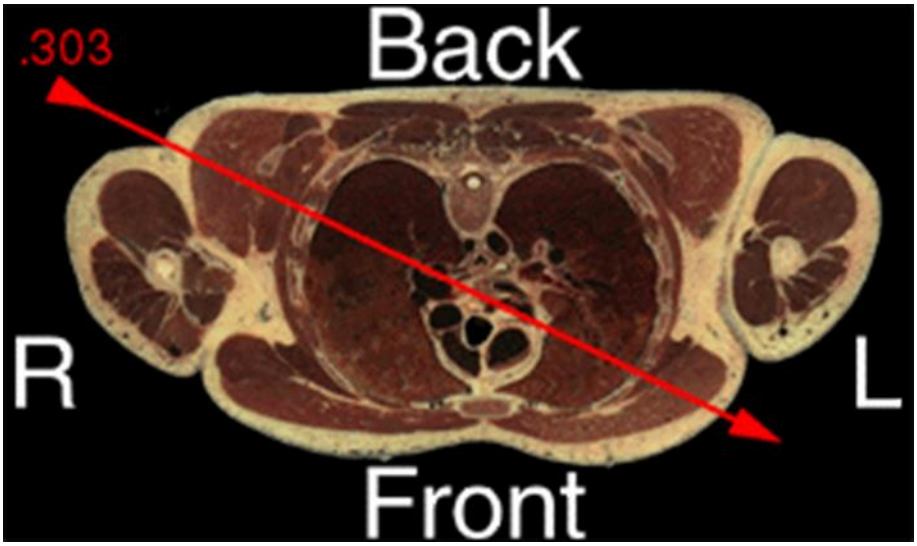
As Richthofen climbed over the ridge it is at this point that a third serious claimant appears in the story
As the two aircraft flew directly towards the two Lewis machine gun posts of 53rd Battery on the high ground of Morlancourt Ridge above the Somme River.

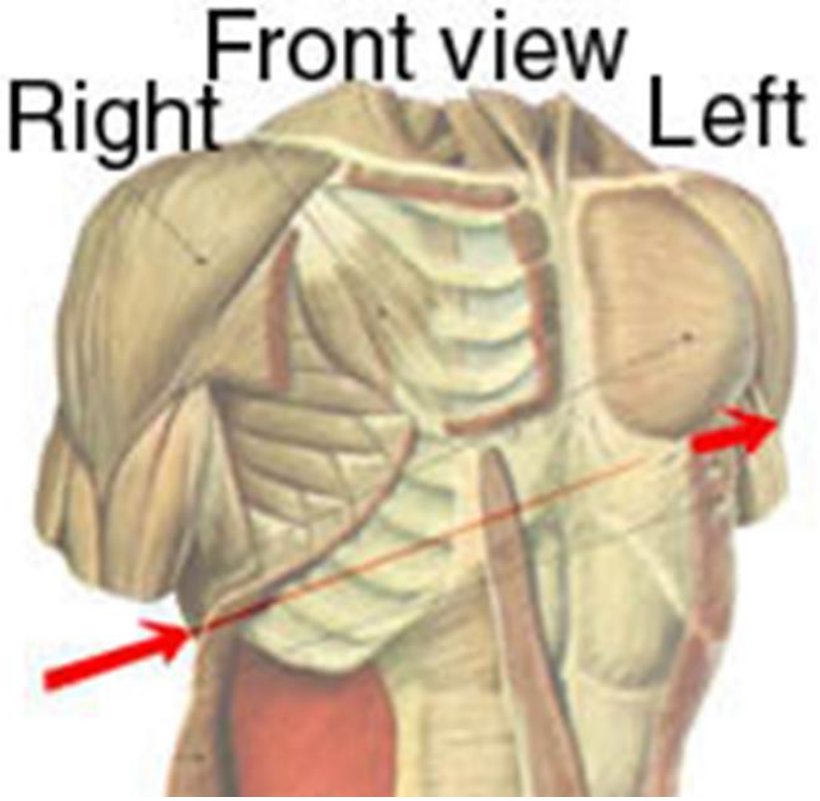
Gunner Robert Buie
Gunner Robert Buie, 53rd Battery, 14th Australian Field Artillery Brigade

At 200 yards, with my peep sight directly on Richthofen's body I began firing with steady bursts. His plane was bearing frontal and just a little to the right of me and after 20 rounds I knew that the bullets were striking the right side and front of the machine, for I clearly saw fragments flying. Still Richthofen came on firing at Lieutenant May with both guns blazing. Then just before my last shots finished at a range of 40 yards Richthofen's guns stopped abruptly. The thought flashed through my mind - I've hit him! It veered a bit to the right and then back to the left and lost height gradually coming down near an abandoned brick kiln. I looked to my gun. It was empty. I had fired a full pannier.

Buie had discerned a great deal from the blur of the red Triplane passing about 150 feet overhead at more than 100 mph.
As Richthofen turned sharply back, reversing his course and heading back to the German lines, Popkin had the chance of a second burst although this was at a longer range.

The red Triplane crashed into the ground and there we have it. Richthofen was shot down by Brown from behind, by Popkin from below and on the left, by Buie and Evans from straight ahead and slightly below, or by Popkin's second burst from below on the right as Richthofen turned back to the east. Or of course any British or Australian soldier in the Somme sector could have hit him with a casual rifle shot out of the blue. Richthofen was dead, most believe, before his Fokker Triplane hit the ground.
There was no autopsy, although a selection of medical officers examined the body at various times, drawn one suspects by morbidity than any academic rigor.





Their slightly confusing and contradictory reports show that just one bullet had hit Richthofen entering the body from slightly behind and the right armpit, passing through the body and emerging through the chest by the left nipple. He had some minor facial abrasions and a possible fractured jaw caused by the crash. The body was *not* opened up and the track of the bullet was merely hazarded at by inserting a wire to probe for the passage of the bullet. This is not particularly scientific, certainly open to question and thus leaving some impressive theoretical constructs wobbling about on very insecure foundations.

Common sense, backed up by studies of the angle at which the bullet *presumably* hit Richthofen using a mock-up of the cockpit, seem to indicate that the bullet must have hit him from his right hand side, and both slightly behind and below. The question is often seen almost in medical terms. Could Richthofen have lived another 60 seconds as he travelled the 1,500 yards from the point where Captain Roy Brown last attacked him to the point at which he pulled up and crashed? Some say he could; some say he couldn't; but in truth it is impossible to know. Without a proper autopsy there is insufficient evidence for modern doctors, no matter how expert, to give anything other than a guess as to how long he could have survived the wound. Why indeed did Richthofen keep missing May's helpless Camel during this phase? Popkin could only have hit the *left-hand* side of Richthofen at this time. If only Popkin could have hit Richthofen in his *right* side during this phase of the fight then all might have been reasonably clear. So Popkin's claim is only really feasible if he hit Richthofen *after* he had turned back to the east. The Australian Lewis gunners, Buie and Evans could not have wounded Richthofen in the back from their position on the hill in front of him. Their claim seems to lack credibility, but perhaps they hit him *after* he had turned back, although this is explicitly against the thrust of Buie's 'head on' statement.

So who fired the fatal bullet? Although many distinguished analysts feel it *must* have been Sergeant Popkin after Richthofen had turned back and therefore presented his right hand side him, that it would require a remarkable deflection shot to hit at long range a small scout moving at over 100mph at low-level right across his line of sight and with an unwieldy Vickers gun. Contrast this to the relatively easy 'straight' shot briefly available to Captain Roy Brown an acknowledged ace. But to believe Brown was the killer is to believe that Richthofen survived his fatal wound for a whole minute. In the absence of any *real* evidence to the contrary, I have

always sentimentally preferred to believe that it was indeed Brown and that Richthofen spent his last dying minute, as he would have surely have wished, trying to get his eighty-first 'kill'. No-one will ever know and one cannot be dogmatic at this distance in time. What is certain is that Richthofen had committed a catalogue of errors that fatally contradicted his own *dicta*. If he had flown like that in 1916 he would certainly have never survived to become an ace; in 1918 it was suicidal to pursue a scout extremely low down over the British lines, with faulty machine guns, under heavy fire from the ground and under attack from an unseen scout on his tail who was an ace in his own right.

RETROSPECTIVELY it is strange to think how the little heed was paid to the aces on either side by the men with real power. The 'Red Baron' was a cult figure to the Germans

His deeds had been used as an inspirational propaganda weapon both at home and abroad; but many aerial historians have long been guilty of grossly exaggerating the impact of individual aces on the course of the war. Who can discern any 'real' effect of the death of even Richthofen, indubitably the greatest of them all, in the midst of the massed air battles of April 1918. Did morale of the German Air Service collapse? Did the Jasta scouts stay at home in mourning? On the contrary it was evident that they would fight on regardless under new leaders and with fresh new aces emerging constantly from the ranks.

On 9 July Mannock's friend and rival, the illustrious Major James McCudden (left)travelled back to the Western Front to resume his career of destroying hapless German aircraft. He found himself in hazy weather over the airfield of Auxi-le-Chateau a mere 5 miles short of his destination. Aware of the recent 'fluctuations' in the front line McCudden decided to land to get directions rather than risks some awful embarrassing blunder on his first day back. He made a neat landing, and after asking for directions, immediately took off again and crashed while attempting what seem to witnesses to be a half role

The greatest, most deadly British ace of the war was dead – killed by a tree! His career stalled at 57 'victories' most of which were irrefutable. He was just 23 years old.

It seemed incomprehensible and rumours soon sped round the RAF to explain what seemed unexplainable. Some said that McCudden was drunk, perhaps the wrong carburettor had been fitted to his SE5a; most commonly of all it was suggested his engine had failed and that he had stalled and crashed in trying to regain the airfield - the old beginner's mistake.

Edward Mannock (left)in particular took it badly. By June 1918, Mannock was a man coming to the end of his tether. He had always used humour to disguise his own jangling nerves, in essence laughing away his fears, but in the course of this he developed a macabre mania for describing the consequences of being shot down in flames.

Lieutenant Ira Jones, 74 Squadron

"Whenever he sends one down in flames he comes dancing into the mess, whooping and hallooing, "Flamerinoees, boys! Sizzle, sizzle, wonk! Then at great length, he tries to describe the feelings of the poor old Hun by going into the minutest details. Having finished in a frenzy of fiendish glee, he will turn to one of us and say, laughing, "That's what will happen to you on your next patrol, my lad!"

He was evidently suffering from combat fatigue and he should have been sent home. On his last leave in June he had been more than usually moody, convinced he would be killed, and his pre-war friend Jim Eyles reported physical reactions that illustrated the insupportable nervous strain he was under.

He started to tremble violently. This grew into a convulsive straining. He cried uncontrollably, muttering something that I could not make out. His face, when he lifted it, was a terrible sight. Saliva and tears were running down his face; he couldn't stop it. His collar and shirt front were soaked through. He smiled weakly at me when he saw me watching and tried to make light of it; he would not talk about it at all.

Yet patriotic duty or the driving ambition to be the highest scoring ace beckoned him still, and on his return from leave he was promoted to major and posted to take over the command of 85 Squadron. Once installed as their squadron leader, Mannock concentrated on the developing the efficiency of his pilots in flying and fighting in tightly controlled formations, and he took a full and active part as a patrol leader himself. The squadron responded exceptionally well to his inspirational leadership and soon began to function effectively as a collective unit.

This increasing willingness to take on all risks and his confidence that he could shoot or manoeuvre his way out of any trouble, so different from his former caution; these all increasingly co-existed with premonitions of his own death. In particular on a couple of occasions he followed tumbling German aircraft right down to the ground to ensure their destruction. This entirely contradicted his own 'always above' watchwords, but he was no longer entirely rational.

Mannock often tried to help his inexperienced pilots score their first kill. This was certainly unusual, though not entirely unique amongst the very best flight leaders, but it should not be exaggerated. He seems to have done this about five or six times and certainly usually claimed a share in the 'kill' himself. It was while carrying out such a munificent mission that Mannock's finally luck ran out.

On 26 July 1918, Mannock took a young New Zealand pilot, Lieutenant Douglas Inglis up on a dawn patrol to try and break his 'duck'. At about 05.30, Mannock sighted a two-seater LVG. Inglis had been ordered to stick close to Mannock's tail.

Lieutenant Douglas Inglis, 85 Squadron

A quick turn and a dive, and there was Mick shooting up a Hun two-seater. He must have got the observer, as when he pulled up and I came in underneath him I didn't see the Hun shooting. I flushed the Hun's petrol tank and just missed ramming his tail as it came up when the Hun's nose dropped. Falling in behind Mick again we did a couple of circles round the burning wreck and then made for home.

It all happened so quickly, right in front of the disbelieving eyes of Douglas Inglis.

I saw Mick start to kick his rudder and realised we were fairly low, then I saw a flame come out of the side of his machine; it grew bigger and bigger. Mick was no longer kicking his rudder, his nose dropped slightly and he went into a slow right-hand turn round, about twice, and hit the ground in a burst of flame.

Inglis himself had his petrol tank holed and only just gained the British front line before making a forced landing by the trenches.

Mannock's reputation as the finest patrol leader of the war within the RAF was secure, but few civilians had ever heard of him and he was only belatedly awarded a posthumous Victoria Cross in July 1919 – a year after his death. Yet stranger things were to happen. There was widespread

scepticism within the RAF, as opposed to the Royal Canadian Air Force, over the 72 ‘victories’ claimed by Major William Bishop. It is now generally believed that these doubts were the motivation for posthumously raising Mannock’s victory’ score from his claimed score of around 61, right up to a frankly dubious 73; ‘coincidentally’ just one more than Bishop had claimed. It was Mannock’s occasional practice of giving or sharing his ‘kills’ with his wingmen that provided a ‘cover’ for this artificial post-war increase. And there he would remain, lauded in the history books as the highest British scoring ace of the Great War. One can only imagine that had Edward Mannock ever known he would have laughed….

THE aces were tumbling from the sky by mid-1918. Yet the strange thing is that nothing really changed. The hard work of exploring the capabilities of the aircraft had been done long ago; the development of aerial tactics had been completed; the wise words of the importance of preparation and caution had all been spoken. Had the war in the air been altered in any way after their death? In essence the answer is not at all. The numbers of scout pilots flying over the front, well organised by numerous competent tactical leaders, was such that any individual ace work was almost redundant.
As the fighting raged on the ground; so it continued to rage in the sky. The German Air Service was no pushover: however hamstrung its best scout pilots remained excessively dangerous, able to pounce on the slightest misjudgement from their British opponents, who were plentiful but often inexperienced.
Yet although the German Air Service could concentrate their resources for special efforts they could not face sheer ubiquity of the swarms of Allied aircraft of all kinds that pressed deep into their territory. Numbers told

Ordinary young pilots of 22 Squadron

On 11 November their defeat finally had to be accepted. As a result of the Armistice conditions, the German Air Service ceased to exist as a meaningful weapon of war.

The age of the ace was dead. New priorities were increasingly forcing their way onto the agenda of all the air forces. Hundreds of scout aircraft would fly low over the battlefield, spraying machine gun bullets on the fleeting targets of opportunity. Machine guns and small bombs could kill far more men in minutes than the most deadly ace could manage in a year. Bombing spread its wings to cover not only the battlefield itself, but reached back to encompass the airfields and billets of the pilots.

By day or by night it was far easier to decimate a scout squadron by raiding their airfield than to shoot them down in ‘fair’ combat.

The scope of the air war spread from the heights of 23,000 feet right down to ground level; it reached from the front lines back to the industrial heartlands and it was an increasingly a 24 hour, seven day week affair.
It was unrelenting in every sense on the protagonists. Gradually swamped by the scale of the fighting the aces on both sides fought on come what may in the cause of their countries.

The great aces seemed to transcend the grey homogeneity of modern warfare but in the last great battles of that awful year they were swamped – ***aces falling one by one***.

There was only time for a few questions, such was the content of Peter`s presentation, and these were answered in his usual inimitable manner.

Branch Vice Chair Mark Macartney proposed the vote of thanks and Peter responded by wishing Mark `all the best` for his forthcoming wedding and by presenting Mark with a `Good Wishes` card signed by all in attendance.

Peter then drew the raffle , the winners of which get to pick a prize from the excellent selection of books on a Great War theme.

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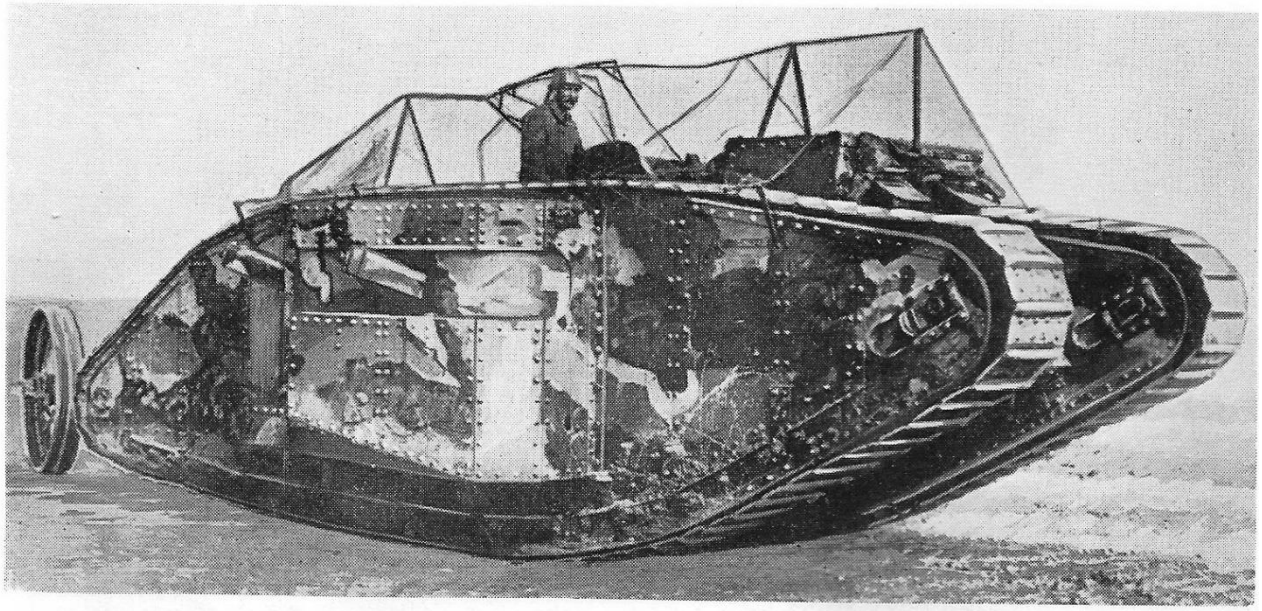
BRITISH FIGHTING TANKS—HEAVY MARKS I, II and III



Altogether 150 machines were built to the specification given on the opposite page, and were designated Tanks Mark I. They were the first tanks used in action (on the Somme, September 15, 1916) and continued in use until about April, 1917. Two types were built, known as 'male' and 'female' tanks, the former carrying a six-pounder gun in each of their sponsons, whereas the latter were armed only with machine-guns.

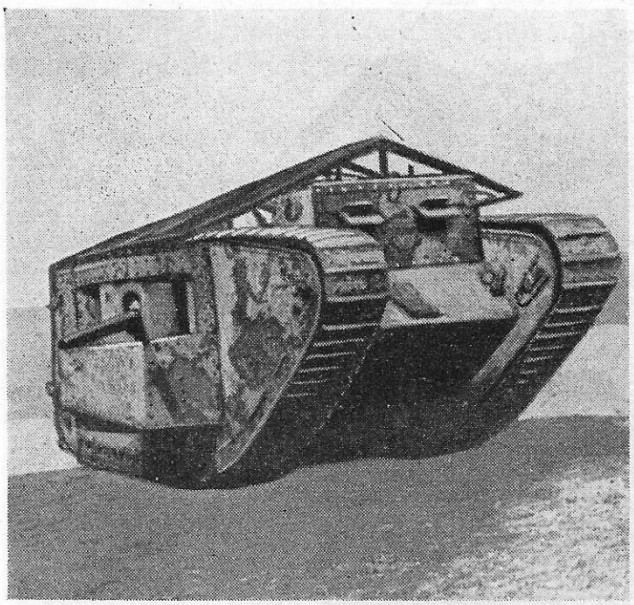
Soon after the Mark I had been put into production a new design embodying a number of small improvements was introduced. Abandonment of the steering tail, heavier armour and provision for wider tracks were amongst the most important of these. Unfortunately the demand for tanks was so urgent that time could not be spared for the incorporation of most of these modifications, and essentially the Mark II and Mark III tanks (50 of each mark were built) remained the same as the Mark I.

The need for heavier armour was brought out later when the enemy found that the Mark I was not proof against his 'K' type armour-piercing machine-gun ammunition. He learnt this in the Battle of Bullecourt, in April, 1917, when he took two of our Mark I tanks 'alive'.

No provision was made in early tanks for splash proofing the inside of the hulls. As a result, a high proportion of face injuries through splash and flaking were sustained by the crews, who, as a protection, were issued with steel masks having a fringe of chain mail to protect the mouth and throat. Another serious disadvantage was the gravity feed petrol system, because of which the supply was completely cut off when the tank was ditched nose downwards, as frequently happened. It was then necessary to hand feed the carburettors with petrol drawn off from the tanks into small tins.

MARKS I, II and III

SPECIFICATION OF MARK I



Performance

Maximum vertical obstacle	4ft. 6 ins.
Maximum trench crossed	10 ft. 0 ins.
Road Speed	3.7 m.p.h.
Radius of action ...	23 miles

Steering

By steering tail.

By differential and secondary gears to each track, assisted by track brake for skid turns.

General—

Weight ...	Male	28 tons
(fully stowed)	Female	27 tons
Overall length ...		26 ft. 5 ins.
do. with steering tail) ...		32 ft. 6 ins.
Overall width ...		13 ft. 9 ins.
Overall height ...		8 ft. 0½ ins.
Ground clearance ...		1 ft. 4½ ins.
Armour		
Maximum ...		12 mm.
Mininum ...		6 mm.
Petrol capacity ...		46 gals.

Engine

Daimler 6-cylinder sleeve-valve. (105 h.p. at 1,000 r.p.m.).

Crew

Eight: Commander, Driver, 2 Gearsmen, 4 Gunners.

Armamemt

	Male	Female
6-pr. 40 calibre QF Hotchkiss gun ...	2	—
Hotchkiss machine-gun	4	1
Vickers light machine-gun	—	4

Ammunition

6-pr. shells	324	—
Small arms ammunition	6272	31232

EARLY STEERING

Steering tail wheels (described under 'Little Willie') were abandoned at the close of the operations in 1916, when all tanks were shorn of their tails and no subsequent models were fitted with them. They proved cumbersome and particularly vulnerable to shell fire.

The most usual method of steering was to lock the differential and to select neutral in the secondary gearbox on the side to which it was desired to turn, the secondary gear on the opposite side remaining engaged in 'High' or 'Low' ratio. By applying the track brake on the neutral side an even sharper turn could be made.

When he desired to turn the driver conveyed his instructions to the gearsmen by first banging on the engine cover to attract their attention and then indicating which gear was to be engaged by holding up one or two fingers. Two fingers pointing downwards signified 'engage neutral.'

MARK IV

This tank was based on the results of experience in the field with the previous three Marks. Designed by Major Wilson late in 1916, a total of 1,015 tanks of this type were built—far more than any other tank used during the 1914-18 war. A brief specification of the Mark IV is given opposite. This type of tank was first used on August 7, 1917, and took part during that year in the Battles of Messines, Ypres and Cambrai. Some Battalions were still equipped with Mark IVs in 1918, and this tank figured prominently in many of the battles of that year also.

A male Mark IV fought the first tank versus tank battle, during the Battle of Villers-Bretonneux on April 26, 1918, when it drove off three German tanks after they had put two female tanks out of action. One of the enemy tanks overturned after having being hit. This action led to a number of female tanks being converted into 'Hermaphrodites' by fitting them with one six-pounder gun sponson to enable them to engage enemy tanks.

The Museum exhibit is a female tank which was discovered in 1943 on an aerodrome in Gloucestershire, where it was being used as a pillbox. It was originally armed with six Lewis machine-guns. The unditching beam is shown mounted on the unditching rails. When required for use it was attached to the track by chains and the differential was locked. The beam was thereby carried under the tank, and was a most effective means of recovery

MARK IV

An alternative form of unditching device was known as the torpedo spud and is also shown attached to the track of this exhibit. An illustration of the spud in use is included later in this Handbook. It could be used singly or in pairs, and superseded the original iron extension spuds which were attached to the track plates and were similar to the modern 'grousers' as fitted to American tanks.

In common with all 1914-18 war tanks, the suspension of the Mark IV is unsprung. The track, which consists of an endless chain of 90 armour plate shoes riveted to two track links, each link connected to the next by a mild steel oval-headed pin secured by a split pin, is supported on the upper surface of the tank by two long steel rails and 10 small bronze blocks. On the underside, the weight of the tank is supported by 26 pairs of rollers. There are two types of rollers, flanged and unflanged; the flanged rollers are fitted in the proportion of about one in three and their purpose is to guide the tank along the track. They also resist the tendency of the tank to move sideways on the track when turning quickly.

SPECIFICATION

General

Weight (fully stowed)	Male	28 tons.
	Female	27 tons
Overall length	...	26 ft. 5 ins.
Overall width	Male	13 ft. 6 ins.
	Female	10 ft. 6 ins.
Overall height	...	8 ft. 2 ins.
Width for conveyance by rail		
$20\frac{1}{2}$ ins. shoes		8 ft. $8\frac{1}{2}$ ins.
$26\frac{1}{2}$ ins. shoes		9 ft. 0 ins.

Note: Sponsons could be swung inboard for transit, instead of being taken off as on earlier marks.

Ground Clearance	...	1 ft. $4\frac{1}{2}$ ins.
Armour		
Maximum	...	12 mm.
Minimum ...	...	6 mm.
Petrol capacity	...	70 gals.

Engine

Daimler 6-cylinder sleeve-valve, 105 h.p.
(Increased in a limited number of later models to 125 h.p.)

Crew

Eight: Commander, Driver, 2 Gearsmen, 4 Gunners.

Performance

Maximum vertical obstacle		4 ft. 6 ins.
Maximum width of trench crossed	...	10 ft. 0 ins.
Road speed	...	3.7 m.p.h.
Radius of action	...	35 miles

Armament

	Male	Female
6-pr. 23 calibre QF Hotchkiss gun	2	—
Lewis machine-guns ...	4	6

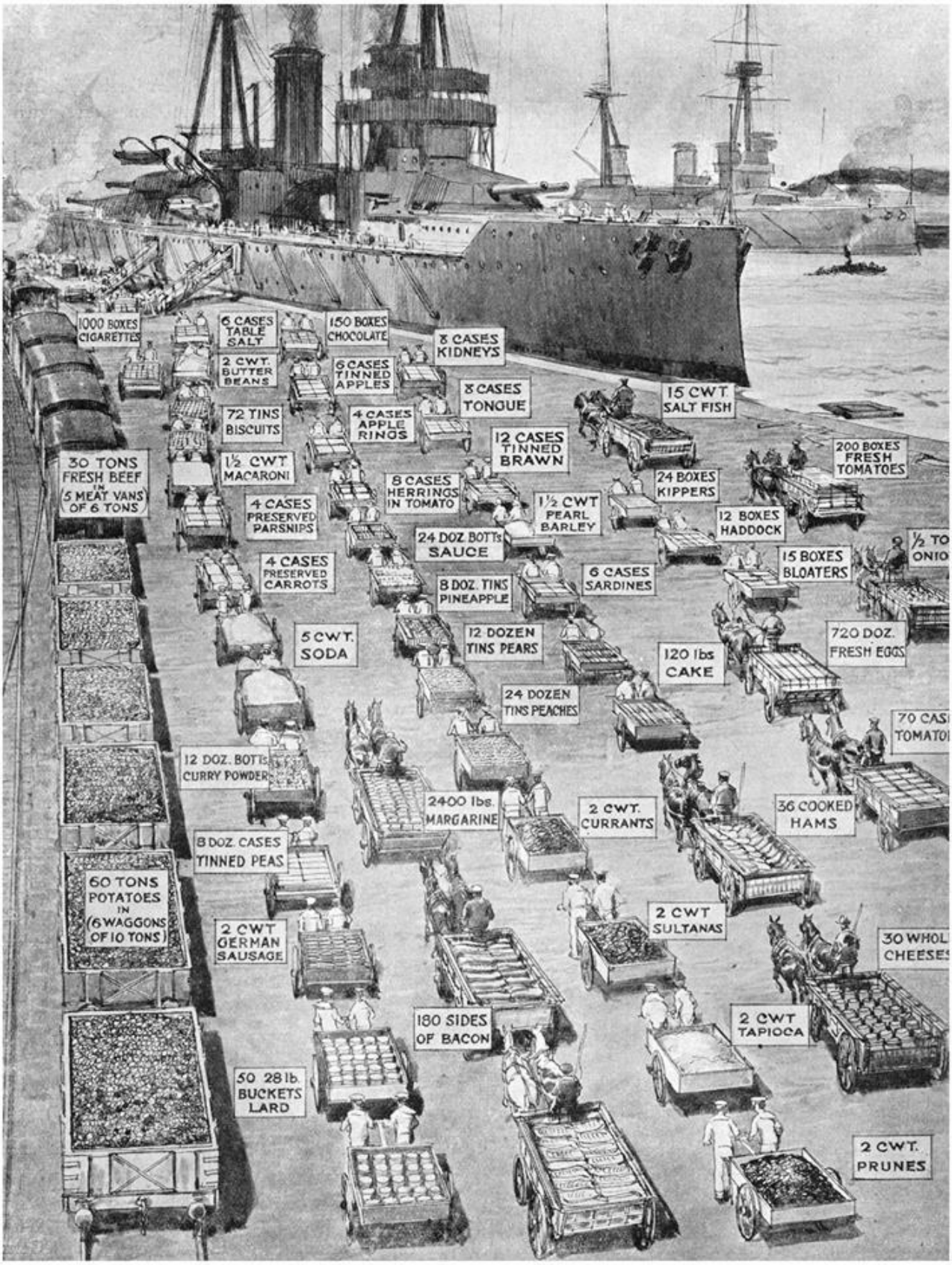
Ammunition

6-pr. shell ...	...	184	—
6-pr. case shot	...	20	—
Small arms ammunition		5640	12972

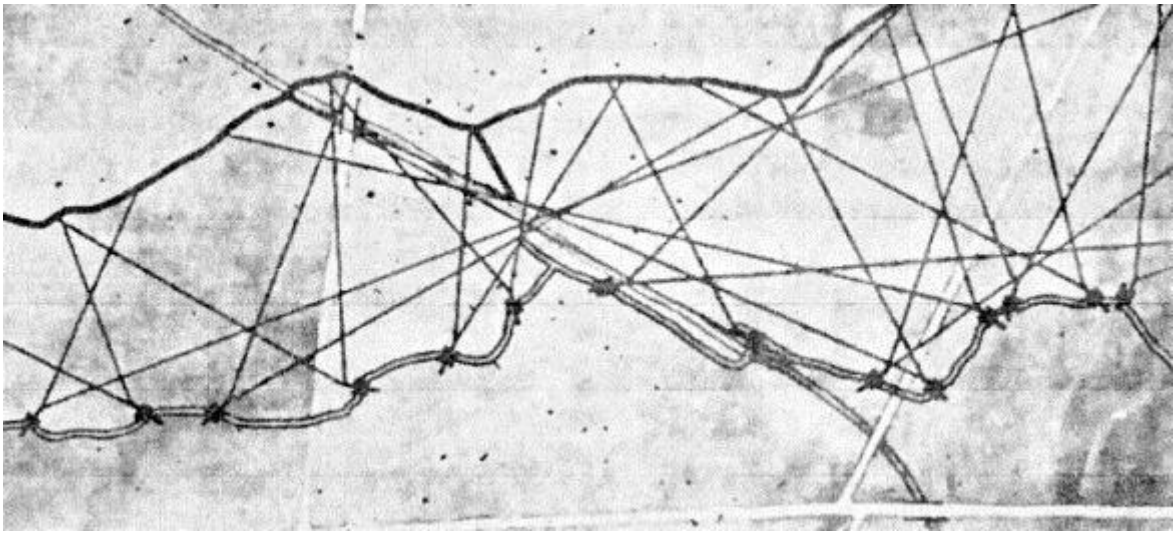
Signalling

Between driver and gearsmen	By hand, later by coloured electric lamps.
Tank to other troops	By flap shutter on pole and by pigeon.
Other troops to tank	Nothing provided.

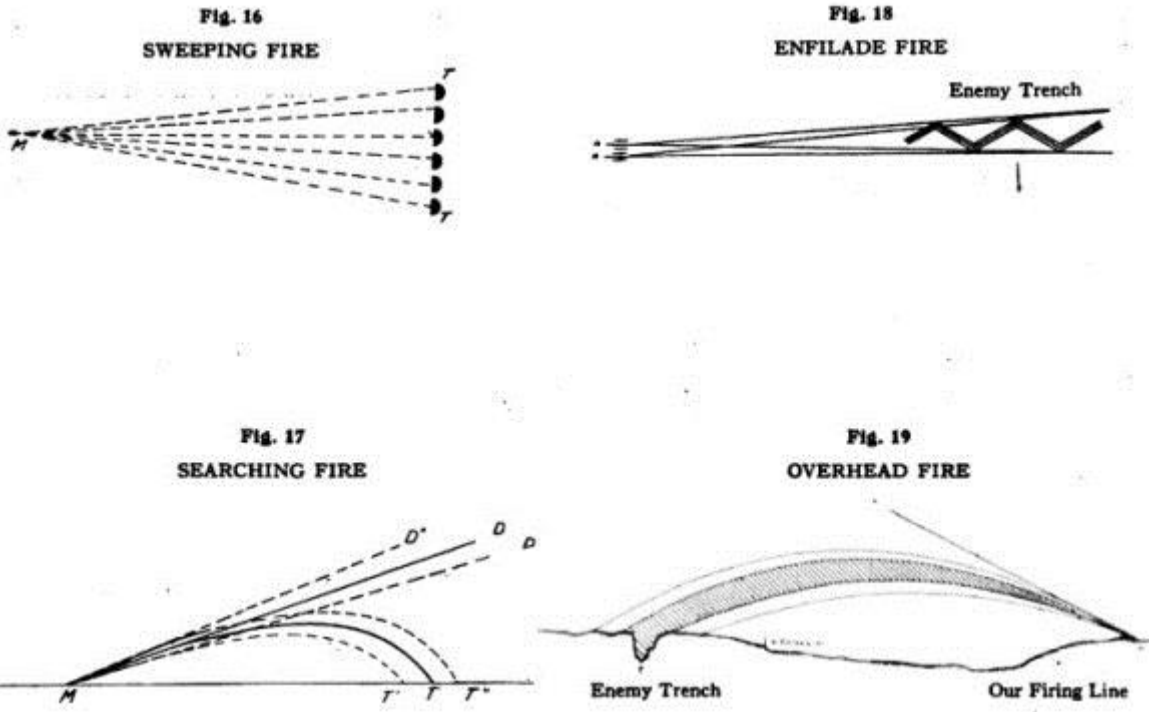
Provisioning a Battleship



WWI Machine Gun Tactics I



How machine guns can sweep No Man's Land. Seen from above … in a machine gun tactics book of the Allies, a dozen machine gun emplacements saturate the battlefield with deadly fire.



Machine gun tactics – like other killing methods – were evolving rapidly during the war. Human ingenuity.

Machine gun tactics developed from a base of almost nothing prior to 1900 to a situation in 1914 where the relatively small numbers of weapons available were often capable of an extreme and disproportionate influence in battle. As trench garrisons were thinned out and attacking formations were likewise made less dense and linear, machine guns continued to increase their importance. This was not to say that they were the prime killers of trench warfare – this dubious distinction fell to the artillery – nor that machine guns were equally useful in all circumstances. For whilst, as we have seen, machine guns were pushed well forward into German attacks on trench lines early in the war, for a long time they remained

most potent in defence. This was partly a question of the evolution of suitable offensive tactics, but it was also a natural function of the attributes of the standard ‘Model 08’ machine gun, which was heavy, water-cooled, and fired from 250-round cloth belts. The gun itself weighed 22kg, whilst the standard Schlitten or ‘sledge’ mount, a thoroughly stable adjustable platform, added a further 34kg. At least one propaganda picture showed a German soldier carrying the whole paraphernalia, mounted barrel and all, on his broad shoulders, but this was a work of a Hercules. The Schlitten was designed with handles for relatively easy carriage by two men, stretcher style, at waist or shoulder height, and when the going got tough on longer distances four men could take a handle each. In the deepest mud the load could be broken down even more, dismounting the gun barrel and hauling this between another two men. Broad leather ‘dragging straps’ helped a little when the load became irksome, hot, or freezing cold.

By itself, however, the gun was useless, and a single filled ammunition belt weighed in at 7kg. Little surprise then that for road transport the guns were either on limbered horse-drawn wagons, or hauled in little hand carts. Since a belt was enough for only a minute or less at rapid fire, or perhaps a maximum of four minutes at the slowest rate of ammunition conservation, many metal boxes of ammunition were needed. The usual allotment on hand for each gun in a six-gun company was 12,000 rounds, or forty-eight belts for each gun – a heap of boxes and cartridges weighing in excess of 2000kg for the group. During a battle the whole lot might be shot away very easily, leaving exhausted gunners and supply troops to replenish the stock from ammunition columns to the rear. On a really bad day this process might have to be repeated more than once, by which time it was likely that casualties would have been incurred. Additional inconveniences included the provision of spare parts, and water to cool the barrel jackets, plus a seventh gun held in reserve in case of emergency or catastrophic failure. For defensive work there were also armoured barrel jackets and gun shields. The heaviest of these weighed about 27kg, but protection had to be balanced against the additional weight. In the event, many guns in the West were used without the large crew shield, but often armoured barrel jackets and abbreviated muzzle shields were retained. For highly accurate long-range work – anything up to 2000 metres – another common piece of kit was the Zielfernrohr 12 optic sight. Interestingly, the actual battle range of the heavy machine gun was limited far more by visibility, terrain, weather, presence of cover, and skill of the gun crew than by the range of the bullet, which was anything up to a theoretical maximum of 4000 metres. The manual Feld-Pioneer Dienst aller Waffen of 1911 illustrated basic designs for open-topped machine gun pits which were roughly the shape of a truncated letter ‘T’ with its base toward the enemy. These could be deep to accommodate standing gunners, or relatively shallow for a seated firer; they might either be dug straight into the ground, or could make use of sandbags. All these designs and variations were replicated on the battlefields of 1914.

The importance placed on machine guns was marked by huge efforts to put more of such weapons in the hands of the troops. Supplementary units were soon raised, and with production of MG 08 machine guns steadily increasing, a second machine gun company was added to regiments as soon as adequate numbers of weapons and trained men became available. Special ‘Marksman’ machine gun units were also raised and deployed to points on the front where there was particular need of their services. Almost 5,000 machine guns had been in the hands of the German army at the outbreak of war, but by 1916 a further 10,000 guns had been produced by the plant at Spandau, with several thousand more now coming from the DWM Berlin factory. Thereafter, production figures would rise ever more steeply until the total numbers of MG 08 guns made by November 1918 reached about 72,000 – roughly two thirds from DWM and the remainder from Spandau.

By 1916 experience had advanced to the point where fresh directives on the use of the MG 08 in trench warfare could be issued. One of the most important of these was the document Regulations for Machine Gun Officers and Non Commissioned Officers. This paper made clear that effective concealment was highly important: emplacements were to be so constructed as to avoid telltale heaps of earth as well as to 'cover the whole of the proscribed field of fire'. Usually, there would be two alternative positions nearby having much the same field of fire. No less than sixteen full boxes of ammunition were to be kept by the gun (4000 rounds), and when a box was expended it was to be replaced immediately from the belt store. During the day the machine gun was to be kept in a dugout, but by the steps ready to move; at night it would stand loaded and ready to fire in its emplacement. Three spare barrels were also to be kept near each gun, as was plenty of water in buckets and a butt for each gun. Protection of the gun and crew were critical, and for close defence six hand grenades were to be kept nearby. One armed sentry was to be posted by day, two by night, each having the use of a periscope.

In the event of 'sighting a particularly favourable target' or a surprise attack, the gun was to open fire immediately. Usually, the crew would check if friendly troops were out to the front before commencing fire, but this nicety would be dispensed with if the enemy attacked, not firing being more dangerous than the obvious risk to one's own men. Where possible, an immediate situation report was to be made to both the platoon commander and the sector machine gun officer. To make rapid and accurate firing possible, likely targets within the zone would be registered, and a range card made for easy adjustment of fire. 'Daily fire' could also be organised by the company commander, indicating in advance the targets to be engaged and the number of rounds to be fired.

Machine guns were relied upon more and more as a cornerstone of the defensive battle alongside artillery, rifles and grenades. The crucial thing was that they should be able to survive artillery bombardment, preferably in dugouts, and then be quickly deployed to firing positions on the surface. As eye witness Matthaus Gerster would record of the first day on the Somme, in Die Schwaben an der Ancre (The Schwabians on the Ancre):

Looking towards the British trenches through the long trench periscopes held up out of the dugout entrances there could be seen a mass of steel helmets above the parapet showing that the storm troops were ready for the assault. At 7.30 am the hurricane of shells ceased as suddenly as it had begun. Our men at once clambered up the steep shafts leading from the dugouts to daylight and ran singly or in groups to the nearest shell craters. The machine guns were pulled out of the dugouts and hurriedly placed in position, their crews dragging the heavy ammunition boxes up the steps and out to the guns. A rough firing line was thus rapidly established. As soon as the men were in position, a series of extended lines of infantry were seen moving forward from the British trenches. The first line appeared to continue without without end to right and left. It was quickly followed by a second, then a third and fourth. They came on at a steady easy pace as if expecting to find nothing alive in our front trenches … The front line, preceded by a thin line of skirmishers and bombers, was now half way across No Man's Land. 'Get ready' was passed along our front line from crater to crater, and heads appeared over the crater edges as final positions were taken up for the best view, and machine guns mounted firmly in place. A few minutes later, when the leading British line was within a hundred yards, the rattle of machine gun and rifle broke out along the whole line of shell holes. Some fired kneeling so as to get a better target over the broken ground, whilst others, in the excitement of the moment, stood up regardless of their own safety, to fire into the crowd of men in front of them. Red rockets sped up into the blue sky as a signal to the artillery, and immediately afterwards a mass of shells from the German batteries in rear tore through the air and burst among the advancing lines. Whole sections seemed to fall, and the rear formations

moving in close order, quickly scattered. The advance rapidly crumbled under this hail of shells and bullets. All along the line men could be seen throwing up their arms and collapsing, never to move again. Badly wounded rolled about in their agony, and others, less severely injured, crawled to the nearest shell hole for shelter … the extended lines, though badly shaken and with many gaps, now came on all the faster. Instead of a leisurely walk they covered the ground in short rushes at the double. Within a few minutes the leading troops had advanced within a stone's throw of our front trench, and while some of us continued to fire at point blank range, others threw hand grenades among them. The British bombers answered back, whilst the infantry rushed forward with fixed bayonets. The noise of the battle became indescribable. The shouting of orders and the shrill cheers as the British charged forward could be heard above the violent and intense fusillade of machine guns and rifles and bursting bombs, and above the deep thunderings of the artillery and shell explosions.

As orders of 6th Bavarian Division observed, the Somme showed the 'decisive value' of machine guns in defence, and the more the enemy bombarded the German trenches before attacking, 'the greater the extent to which we must rely on the employment of machine guns.' However, machine guns would only frustrate an attack if they could be kept in serviceable condition, and then 'brought up into the firing position in time'. This could now only be achieved if the majority of the machine guns was kept out of the front two lines trenches, as otherwise there was no certainty that the enemy's assault would be seen in time. Locating the emplacements behind the second, or even the third, line of trenches also put them in places where they were considerably less effected by methodical barrages. The individual fire positions were to be such that they flanked the trench systems, or provided wide fields of fire. A proportion of weapons were best kept well behind the trenches altogether, in covered deep pits, platforms in trees, hedges, or even out in the open provided the enemy could not register them before making an advance.

It was well appreciated that the great weight of a machine gun and its ammunition was a serious impediment, making it difficult to get the pieces out of secure dugouts and hiding places and quickly into firing positions. Accordingly, there were experiments with, and production of, expedient 'trench mounts' during 1915. These were in widespread use by 1916. They might incorporate a pivot on a wooden board, or a small, pronged stand which could achieve some stability when pressed into the soil. They were not, however, more than a temporary answer, and not calculated to produce very accurate fire. Moreover, since the gun barrel and jacket were retained along with the trailing belt, neither were they a completely effective solution to the weight problem.

Though German machine guns were rightly feared, in one vital aspect the development of German weapons and tactics lagged well behind what the British had pioneered as early as the end of 1914: the true 'light' machine gun. The American-designed Lewis gun, at first designated as an 'automatic rifle' had been tested even before the outbreak of war. By November 1914 an experimental handful had made their way to the front, being seen initially as stop-gap supplements to the inadequate numbers of 'heavy', tripod-mounted Vickers and Maxim guns on hand. Yet it was quickly realised that a lighter version of the machine gun that was air cooled and had a magazine attached rather than using trailing belts, offered far greater tactical flexibility. It could be carried by one man, set up in seconds, and work its way into positions otherwise impractical with large tripods and water canisters. Whilst in simple terms its raw firepower, range and accuracy were all inferior to the MG 08 or Vickers – points all amply noted by contemporaries – it opened up new possibilities for infantry tactics and organisation that were scarcely dreamed of prior to the war. Initially, both 'heavy' and 'light' machine guns coexisted within the British infantry battalions, but by 1916, with large numbers of Lewis guns

now issued to the infantry, heavier weapons were withdrawn and grouped into companies and battalions of the new Machine Gun Corps. Within an infantry platoon a light machine gun could now operate as a mobile firebase, and a variety of tactics using grenades, rifles, bayonets and rifle grenades as a complementary group of weapons with different characteristics could begin to develop.

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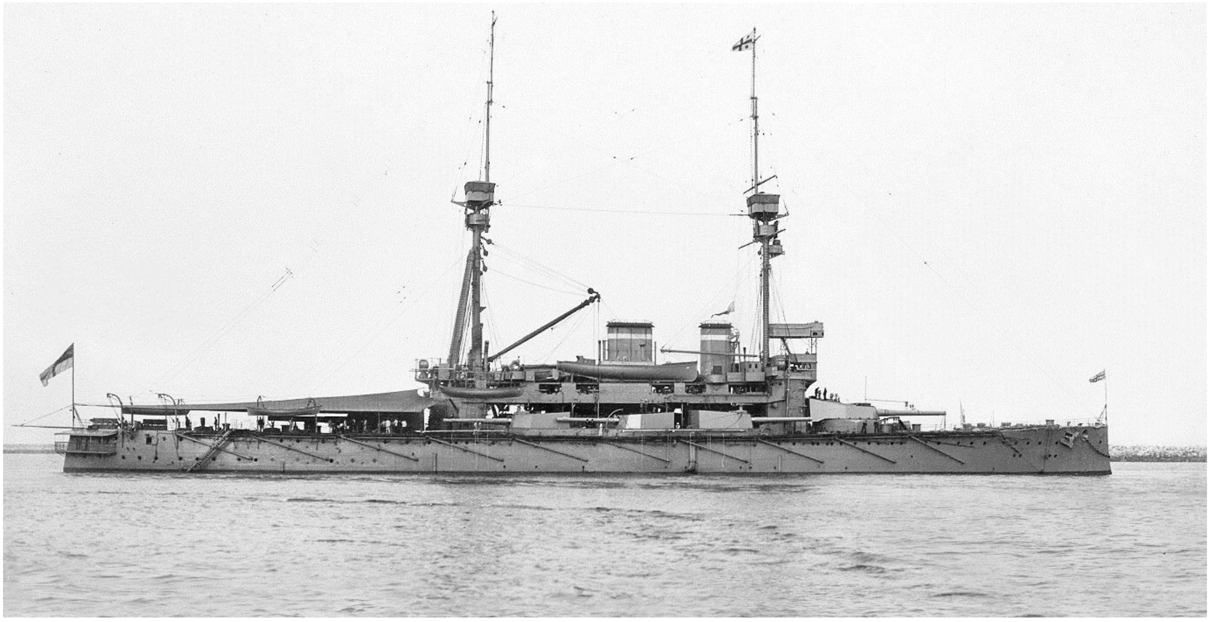
`Lord Nelson` class pre-dreadnought battleships



The Lord Nelson class were conceived at a time when the evolution of the battleship was undergoing radical changes. Lessons from the Russo-Japanese War (1904 to 1905) seemed to imply that in the future engagement ranges would increase to a distance where secondary batteries would be of far less important and maybe even redundant. It was also felt in some schools of thought that the lower rate of fire from the big guns, at closer ranges and in poor viability, the intermediate calibre might overwhelm the all big guns ship. We know in hindsight the all 'big-gun-ship' or the dreadnought was vindicated in the end, but at the conception of the dreadnought no one knew sure which way the battleship would evolve over the next decade. The Admiralty conceived the Dreadnought project, but also the Lord Nelson class at similar times. A two horse race and if Dreadnought horse took a tumble, then nothing was lost, as they still had the Lord Nelson's in the race.

The Lord Nelson's were designed and laid down in the midst of big gun debate, in 1904/5 Hindsight shows they were redundant on conception and never during their years of service would they for one second be feted as the cutting edge of naval design, the best in design. They were obsolete from the moment their keels were laid. Maybe they are the only capital ships to have been so?

Sir Phillip Watts first foray into battleship design was with the Lord Nelson's. They followed the pattern established by their predecessors, the Royal Sovereign-class of 1890s in that they had two twin 12" main battery mounts, one fore and one aft. That aside they were a departure from previous British pre-dreadnought designs and but for the Dreadnought, they might have been the ones to marked a new era in pre-dreadnought design.

In the response to foreign battleships of similar displacement, the preceding King Edward VII-class battleships had been fitted with 9.2-inch intermediate battery and a 6 inch secondary

battery. The Lord Nelson's went further along this path with an all 9.2-inch secondary battery. The exclusion of the 6 inch guns was a new idea and not since HMS Inflexible of 1881 had British battleships not carried a 6" battery. Their 9.2-inch battery was mounted in turrets (four double and two single) on the upper deck, rather than on the main deck in a central battery or casemates. This solution eliminated the problem of being unable to work the secondary battery in a seaway. This removed a problem of the British battleships with main-deck-mounted or casement secondary armament which were washed out in all but the calmest weather.

The main calibre 12 inch guns were a new and more powerful 45-calibre design. Both main calibre gun and turrets were the same model and type, as those to be carried by the Dreadnought. In fact the completion of Lord Nelson and Agamemnon was delayed when their main battery guns and mountings were diverted to Dreadnought to speed her completion up in 1906.
It was found in the end, that the mixed-calibre heavy armament proved problematic, as their gunnery officers found it impossible to distinguish between 12-inch and 9.2-inch shell splashes, making fire control impractical. This served to vindicate the dreadnought design and to leave them the undisputed kings of the worlds navies. The all big gun design had been mooted for the Lord Nelson's in January 1905, but their design was too far advanced by then to be changed, and the all-big-gun experiment had to wait for the Dreadnought.

A battery of 12 pounders was retained in the design for anti-torpedo-boat work. They were to be mounted on a large flying deck amidships, which would allow a good field of fire. However their sighting lead to criticism as it made them both a good target and in combat falling debris due to any damage received might fall on the 9.2-inch turrets below. In addition some officers felt the 12-pounder to be too light to deal with more modern and larger torpedo boats.

As larger calibre guns became more common in 'enemy' battleships, it became apparent that greater protection was going needed than had been thought in the previous classes. As a result the Lord Nelson's main armour belt was increased in the design stage to twelve inches depth over the machinery spaces and magazines. The armour belt in the King Edward VII-class battleships, (the preceding class), was never deeper than nine inches thick along its length.

The Lord Nelson's were more heavily armoured than any previous British pre-dreadnought, and even more heavily armored in terms of the area and thickness than any of the dreadnoughts prior to the Orion class of 1909 and possibly the first of the 'super dreadnoughts'?. They were the first British battleships to follow the same concept the Germans had, in using solid watertight bulkheads, with no doors or pipes, (experience in the Russo-Japanese War had suggested that such bulkheads were some use in keeping warships from sinking). The idea being to trap any seawater into the separate compartments and to contain the flooding. Access between the compartments would be via lifts (there must have been a ladder in addition for use in combat?). The lack of direct access between compartments proved unpopular with the crews due to the inconvenience it imposed, and as result was not repeated in the earlier dreadnoughts. To add additional protection, each compartment in the Lord Nelson's was fitted with its own ventilation and pumping arrangements, removing the need for a single ship wide drainage system as had been installed in the previous British battleships and this was seen as a possible weakness during flooding.

Dry dock limitations caused both ship's to be designed shorter overall. Their size limitations permitted them to fit dry docks the previous classes of battleships could not access. These limitations resulted in two ships smaller than the earlier King Edward VII-class battleships and with a cramped interior space. However these restrictions meant both the vessels were fairly flat-bottomed. Combined with the heavy 9.2 inch guns and their turrets the Nelson's were unusually resistant to rolling and gained a reputation as both good sea boats and steady gun platforms.

The size restrictions did necessitate a compromises in the 9.2-inch battery. The smaller ships beam forced the abandonment of mounting the ten 9.2 inch guns in five twin turrets, but instead eight of the guns in four twin and two in single turrets. The space problems, and limitations on the size of the of the 9.2-inch turrets resulted in being cramped enough in service to impair the rate of fire of the guns.

They were to be the last British battleships to have reciprocating engines and twin propellers. The future classes would have both turbines and four propellers. They also were the last to have inward-turning screws, which allowed greater propulsive force and as a result slightly higher speeds and less fuel consumption. But they were unpopular also because this all combined to make ships less manoeuvrable at low speeds or when going astern. It was also decided to stop using mixed boiler types in the same ship, and both had 15 uniform, large water-tube boilers. Babcock & Wilcox boilers in Lord Nelson and Yarrow boilers in Agamemnon. Although mainly coal powered, they were also the first British battleships designed to carry oil, (preceding ship's had to be retrofitted to carry oil). The Lord Nelson's had six oil sprayers and Agamemnon five, and this system extended their range considerably. Both ships could easily make their design speed of 18 knots. During her trials the Lord Nelson made 18.7 knots and Agamemnon made 18.5 knots.

The Lord Nelson's were also the last British battleships to have an armoured ram built into their bow shape. Lord Nelson's cost was £1,651,339 and the Agamemnon's £1,652,347 (£1008 difference) . Equivalent to about £110,000,000 in 2005 prices.

So to summarise. The Lord Nelson's had a displacement of 16,500 long tons and a deep load of 17,683long tons. Their hull length was 443 ft 6 in (135.2 m) the beam 79 ft 6 in (24.2 m) 《and a draught of 26 ft 9 in (8.2 m) Propulsion was from two 4-cylinder, vertical triple expansion steam engines and 15 coal and oil-fired water-tube boilers allowing an installed power of 16,750 ihp (12,490 kW), power,23,000 shp (17,000 kW)18 Babcock & Wilcox boilers,4 shafts; 2 steam turbine sets. Two screws provided a speed of 18 knots . Their endurance range was 9,180 nautical miles at 10 knots . The crew numbered between 800 and 817 men ,.
Armament as was four 12-inch Mk X guns in twin turrets giving a shooting range of 20,435 yards at 16° (11.6 miles), with a 859 lb. armor piercing shell.

Ten 9.2-inch Mk XI guns in four twin and two single turrets with a range of 16,200 yards at 15° (9.2 miles) using a 380 lb. armor piercing shell.

Twenty four QF 12-pounder 18 cwt guns 《27 × single 12-pdr (76 mm) 》 with a range of 11,750 yards at 40°. In addition they had an AA ceiling 19,000' at 70° and two 3-pounder guns, all mounted in single units.

Five 17.72-inch torpedo tubes. Twenty three torpedoes were carried for resupply.《5 × 18-inch (450 mm) torpedo tubes》with a range of 800 yards at 26.5 knots. .

'Two tubes were forward and depressed by one degree and angled 10 degrees before the beam. The axis of the tube was eleven feet below the load water line and 2 foot 5 inches above the deck.

The two aft tubes were also , depressed 1 degree and angled at 25 degrees abaft the beam, with an axis of tube 11 feet below load water line and 2 foot 5 inches above the deck.
The stern tube was like wise depressed 1 degree, an axis of tube 7 feet below load water line and 1 foot 6 inches above the deck'. [1]

In 1909 a decision was made for the vessels to carry 10 heater torpedoes, distributed with six in the forward submerged flat, two in the aft, and two at the stern tube. The aim, when stocks

were available, was to have the ten heaters torpedoes, (Mark VI* H. or Mark VI** H). In 1913, it was agreed to replace the torpedoes on the ships with Mark VI** H. or Mark VI*** H. torpedoes.

The ships were never to received directors for their main or secondary batteries and the ship's guns were organized into 3 groups:
1:Two 12-in turrets.
2:Starboard 9.2-in turrets
3:Port 9.2-in turrets.
These ships were never received Dreyer tables[2]. The ship's were the first battleship class in the Royal Navy to have Target Visible and Gun Ready signals, with indications of which turret could see the target and which guns were ready being visible in the 'TSes' and control positions. In September 1914, the ships were allowed four additional pairs of Pattern 343 Service Binoculars.

The belt armour was 12 in (305 mm) 《4–11 in (102–279 mm)》 and the deck armour 1 to 4 in (25–102 mm) 《0.75–3 in (19–76 mm)》. The barbettes were armoured between 3 and 12 in (76–305 mm) 《4–11 in (102–279 mm)》 while the main gun turrets were covered in 12 to 13.5 in (305–343 mm) 《3–12 in (76–305 mm)》 armour. The secondary gun turrets had 3 to 7 in (76–178 mm) and the conning tower 12 in (305 mm) 《11 in (279 mm)》. Bulkheads were 8 in (203 mm) 11 in (279 mm) 《8 in (203 mm)》.

PART ONE

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(The Lord Nelson's and Dreadnought impacted on each other, so a comparison is for me, necessary. As you read on you'll find Dreadnought's statistics noted in the bracket styled 《 》. It will in places be confusing on the eyes but I feel its both an interesting and relevant comparison. Plus I've added some notes at the end of this series, so [ ] means, there's a note. OK back to the post).

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Dry dock limitations caused both ship's to be designed shorter overall. There size limitations permitted them to fit dry docks the previous classes of battleships could not access. These limitations resulted in two ship's smaller than the earlier King Edward VII-class battleships and with a cramped interior space. However these restrictions meant both the vessels were fairly flat-bottomed. Combined with the heavy 9.2 inch guns and their turrets the Nelson's were

unusually resistant to rolling and gained a reputation as both good sea boats and steady gun platforms.

The size restrictions did necessitate a compromises in the 9.2-inch battery. The smaller ships beam forced the abandonment of mounting the ten 9.2 inch guns in five twin turrets, but instead eight of the guns in four twin and two in single turrets. The space problems, and limitations on the size of the of the 9.2-inch turrets resulted in being cramped enough in service to impair the rate of fire of the guns.

They were to be the last British battleships to have reciprocating engines and twin propellers. The future classes would have both turbines and four propellers. They also were the last to have inward-turning screws, which allowed greater propulsive force and as a result slightly higher speeds and less fuel consumption. But they were unpopular also because this all combined to make ships less manoeuvrable at low speeds or when going astern. It was also decided to stop using mixed boiler types in the same ship, and both had 15 uniform, large water-tube boilers. Babcock & Wilcox boilers in Lord Nelson and Yarrow boilers in Agamemnon. Although mainly coal powered, they were also the first British battleships designed to carry oil, (preceding ship's had to be retrofitted to carry oil). The Lord Nelson's had six oil sprayers and Agamemnon five, and this system extended their range considerably.Both ships could easily make their design speed of 18 knots. During her trials the Lord Nelson made 18.7 knots and Agamemnon made 18.5 knots.

The Lord Nelson's were also the last British battleships to have an armoured ram built into their bow shape. Lord Nelson's cost was £1,651,339 《 £1,785,683》 and the Agamemnon's £1,652,347 (£1008 difference) . Equivalent to about £110,000,000 in 2005 prices.

So to summarise. The Lord Nelson's had a displacement of 16,500 《18,120》 long tons and a deep load of 17,683《18,410》 long tons. Their hull length was 443 ft 6 in (135.2 m) 《527 ft (160.6 m)》 the beam 79 ft 6 in (24.2 m) 《82 ft 1 in (25.0 m)》 and a draught of 26 ft 9 in (8.2 m) 《29 ft 7.5 in (9.0 m) (deep load)》 . See told you, confusing!
Propulsion was from two 4-cylinder, vertical triple expansion steam engines and 15 coal and oil-fired water-tube boilers allowing an installed power of 16,750 ihp (12,490 kW), 《 Installed power,23,000 shp (17,000 kW)18 Babcock & Wilcox boilers,4 shafts; 2 steam turbine sets. Two screws provided a speed of 18 knots 《21》 . Their endurance range was 9,180 nautical miles at 10 knots 《6,620 nmi (12,260 km; 7,620 mi) at 10 knots》 . The crew numbered between 800 and 817 men , 《700-810》 .
Armament as was four 12-inch Mk X guns 《5 × twin 12-inch (305 mm) guns》 in twin turrets giving a shooting range of 20,435 yards at 16° (11.6 miles), with a 859 lb. armor piercing shell.

Ten 9.2-inch Mk XI guns in four twin and two single turrets with a range of 16,200 yards at 15° (9.2 miles) using a 380 lb. armor piercing shell.

Twenty four QF 12-pounder 18 cwt guns 《27 × single 12-pdr (76 mm) 》 with a range of 11,750 yards at 40°. In addition they had an AA ceiling 19,000' at 70° and two 3-pounder guns, all mounted in single units.

Five 17.72-inch torpedo tubes. Twenty three torpedoes were carried for resupply. 《5 × 18-inch (450 mm) torpedo tubes》 with a range of 800 yards at 26.5 knots. .

'Two tubes were forward and depressed by one degree and angled 10 degrees before the beam. The axis of the tube was eleven feet below the load water line and 2 foot 5 inches above the deck.

The two aft tubes were also , depressed 1 degree and angled at 25 degrees abaft the beam, with an axis of tube 11 feet below load water line and 2 foot 5 inches above the deck.
The stern tube was like wise depressed 1 degree, an axis of tube 7 feet below load water line and 1 foot 6 inches above the deck'. [1]

In 1909 a decision was made for the vessels to carry 10 heater torpedoes, distributed with six in the forward submerged flat, two in the aft, and two at the stern tube. The aim, when stocks were available, was to have the ten heaters torpedoes, (Mark VI* H. or Mark VI** H). In 1913, it was agreed to replace the torpedoes on the ships with Mark VI** H. or Mark VI*** H. torpedoes.

The ships were never to received directors for their main or secondary batteries and the ship's guns were organized into 3 groups:
1:Two 12-in turrets.
2:Starboard 9.2-in turrets
3:Port 9.2-in turrets.
These ships were never received Dreyer tables[2]. The ship's were the first battleship class in the Royal Navy to have Target Visible and Gun Ready signals, with indications of which turret could see the target and which guns were ready being visible in the 'TSes' and control positions. In September 1914, the ships were allowed four additional pairs of Pattern 343 Service Binoculars.

The belt armour was 12 in (305 mm) 《4–11 in (102–279 mm》 and the deck armour 1 to 4 in (25–102 mm) 《0.75–3 in (19–76 mm)》. The barbettes were armoured between 3 and 12 in (76–305 mm) 《4–11 in (102–279 mm)》 while the main gun turrets were covered in 12 to 13.5 in (305–343 mm) 《3–12 in (76–305 mm)》 armour. The secondary gun turrets had 3 to 7 in (76–178 mm) and the conning tower 12 in (305 mm) 《11 in (279 mm)》. Bulkheads were 8 in (203 mm) 11 in (279 mm) 《8 in (203 mm)》.
The class's lead ship the Lord Nelson was laid down at the Palmers yard in Jarrow on 18 May 1905 《02.10.1905》. Her launch date was the 4 September 1906 《10.10.02. 1906》 and she commissioned into service on the 1 December 1908 《02.12.06》. The delay in completion was a result of her 12-inch guns and turrets being diverted to accelerate completion of Dreadnought [3]. While she was not the last pre-dreadnought laid down for the Royal Navy, she was the last to be completed.

The Lord Nelson was first commissioned into the reserve on 1 December 1908 at Chatham Dockyard, was attached to the Nore Division of the Home Fleet with a nucleus crew. On 5th January 1909 she finally went into full commission to relieve the battleship HMS Magnificent as flagship of the Nore Division, Home Fleet, and in April was to became part of the First Division, Home Fleet.

The Agamemnon was ordered in 1904 and was the first warship to built by the William Beardmore and Company's Dalmuir Naval Construction Works, which necessitated the yards construction! She was laid down on 15 May 1905 and launched on 23 June 1906 even before the dockyards themselves were finished. Her completion was to be delayed by labour troubles and as with her sister, by the diversion of the 12-inch guns to the Dreadnought[3]. She was completed in June 1908, six months before her sister Lord Nelson.

HMS Agamemnon commissioned into service on the 25 June 1908 at the Chatham Dockyard for service, like her sister, in the Nore Division of the Home Fleet. By the time of her delayed completion five dreadnought class battleships and the three Invincible class battlecruisers had been launched.

At the end of 1909, both ships were ordered to received one of eleven Short Distance Radio Sets, to be installed at their next refit behind armour near the fore bridge. These were intended to supplant flag signaling.

On the 11 February 1911, Agamemnon grazed an uncharted rock in the harbour at Ferrol, Spain, and damaged her hull's bottom.

The two ships were transferred in January 1911 to the Second Division of the Home Fleet, and in May 1912 to the 2nd Battle Squadron. Both were temporarily attached in September 1913 to the 4th Battle Squadron and in April 1914, Lord Nelson relieved the battleship HMS Queen as Flagship, Vice Admiral, Channel Fleet.

July 1914 saw Agamemnon as still part of the fourth BS, but on the outbreak of War, she joined her sister ship in the Channel Fleet. The Lord Nelson was serving as the flagship of Admiral Sir Cecil Burney, and Agamemnon formed part of the 5th Battle Squadron which was based at Portland. The ChanneI Fleets main role at this stage of the war was to protect the BEF as it crossed the channel to France.

On 14 November 1914 Agamemnon and Lord Nelson were transferred to Sheerness to guard the coast against the possibility of a German invasion. They both were to return to Portland on 30 December 1914 and from there was employed in the defence of the southern ports of England and carrying out patrols of the English Channel until February 1915.

The new year saw both ships as still part of the Channel Fleet, but it was then decided to despatch the Agamemnon and Lord Nelson to join the fleet stationed off the Dardanelles. Agamemnon sailed on the 9 February 1915, from Portland and took ten days to reach her new station.The Lord Nelson was detached from the Channel fleet and sailed South on the 15 February, arriving eight days later.

Agamemnon arrived on the second day of the opening bombardment on the Ottoman Turkish forts which guard the entrance to the Dardanelles. On her arrival she was to immediately join in on the bombardment. She was also to take part in the shelling of the inner forts later in the month. On the 25th February Agamemnon was hit by seven 9.4-inch shells in the space of ten minutes. She was holed above the waterline and suffered three dead.

Lord Nelson had arrived off the Dardanelles by early March and the two ships formed the 2nd sub-division of Division 1 of the battleship fleet. On the 4th March both ships supported the amphibious landings and participated in another bombardment on two days later. On the 7th March Agamemnon came under heavy fire from Fort Hamidieh, receiving eight hits from large-calibre shells. One hit was reputedly from a of 14-inch , which blew a large hole in her quarterdeck, wrecking both the wardroom and the gunroom. The hit also sent splinters from the deck armour into the maintop 100 yards above. She also received several hits by lighter shells that day, and, although she suffered damage to her superstructure, her fighting and steaming capabilities were not seriously lessened.

Lord Nelson was also to receive several hits, including one by a stone cannonball which landed on the deck and was to kept as a souvenir by the Flag Officer, Arthur Baker, at Longcross Church. She suffered damage to her superstructure and rigging and was holed by one hit below the waterline which flooded two coal bunkers. Another shell sent splinters into the conning tower of the Lord Nelson, wounding Captain McClintock in the head.

During the attack Agamemnon was to be hit in total eight times and the Lord Nelson seven times by heavy calibre shells. Despite the fifteen hits both ships crews suffered only slight wounds.

The Lord Nelson was despatched to Malta for repairs and was back on station by in time for the next assault on the 18th March.

In preparation for the attack on the narrows on 18 March, the two ships formed the 2nd Sub Division of the First Division of the fleet. The First Division was first to enter the straits, and bombard the Turkish forts from long range.

The British plan for 18 March 1915 was to silence the defences guarding the first five lines of mines, which was to be removed overnight by the minesweepers. The next day the remaining defences around the Narrows would then be defeated and the last five minefields would be cleared. The battleships were arranged into three lines comprising of two British and one French, with the supporting ships on both flanks and two ships held in reserve.

The first British line opened fire from Eren Keui Bay at 11.00 approximately. Shortly after 12.00, the French line (Bouvet, Charlemagne, Suffren, and Gaulois) passed through the British line and closed in on the Narrows forts. The Turkish fire began to take a toll with Gaulois, Suffren, Agamemnon and Inflexible all suffering hits. While the naval fire hadn't yet to destroy the Turkish batteries, it had successfully temporarily reduced their rate of fire. By 13.25 the Turkish defences were in the main silent and it was decided to withdraw the French line and bring forward the second British line, as well as Swiftsure and Majestic.

At 13.54 the Bouvet, having made a turn to starboard into Eren Keui Bay, struck a mine, capsized and sank, all within a couple of minutes, killing 600 men. The British reaction at first was that she'd been struck by a shell in her magazine or that she had been torpedoed. They remained, at this stage, unaware of the minefield proximity.

The British duly pressed on with their attack. At around 16.00 Inflexible began to withdraw from her position and struck a mine near where Bouvet went down, killing 30 men. The battlecruiser remained afloat and was eventually beached on the island of Tenedos.

HMS Irresistable was the next to strike a mine. As she drifted helplessly, the crew were taken off. HMS Ocean was ordered to take the Irresistible under tow but the water was thought to shallow to make an approach. At 18.05 Ocean also struck a mine which jammed her steering gear leaving her helpless to. The two abandoned battleships were still a float when the British finally withdrew. A destroyer later returned to torpedo the stricken vessels but despite searching for four hours, she could find no sign of them.

Agamemnon and Lord Nelson were fortunate to survive largely unscathed, although Agamemnon was hit by twelve 6in howitzer shells during the attack. On this occasion a 6-inch howitzer battery opened fire on Agamemnon hitting her the 12 times in 25 minutes. Five of the howitzer shells struck her armour and were to cause no damage, but the seven that struck her exterior caused significant structural damage and temporarily put one of her 12-inch guns out of action.

On the 25th April both ships supported the Gallipoli landings. Lord Nelson was part of the First Squadron, supporting the landings at the tip of the peninsula and the Agamemnon was part of the Fifth Squadron, tasked with containing destroyers and minesweepers. Her job was to protect those ships as they operated inside the straits.

In action an against Ottoman field batteries, Agamemnon was to receive two more hits between 28 April and 30 April, and on the 1st May she provided fire support for Allied troops during a Turkish counterattack. On the 6th May Agamemnon and Lord Nelson bombarded Ottoman artillery batteries prior to the Second Battle of Krithia.

Between the months of May and June 1915, Agamemnon was refitted in Malta.

Lord Nelson was to relieve the battleship Queen Elizabeth as flagship of the British Dardanelles Squadron on 12 May, then flying the flag of Vice-Admiral Rosslyn Erskine-Wemyss. On 20 June, she bombarded both the docks and shipping at Gallipoli, aided in the spotting by a kite balloon, inflicting significant damage on the targets. Lord Kitchener brought his headquarters staff on board her in November and, on 22 December Lord Nelson hoisted the flag of Vice Admiral John de Roebeck when he succeeded Erskine-Wemyss.

On 2 December, Agamemnon with the protected cruiser Endymion and monitor M33 bombarded the Kavak bridge, destroying several spans of it and temporary severing Ottoman communications to the Gallipoli Peninsula.

On the 5th May 1916 Agamemnon damaged the German Zeppelin LZ85 at Salonika with a shell from a 12-pounder and forced it to crash land in the Vardar marshes. The crew of 12 were all captured and the crafts framework was salvaged. It was partially reconstructed and put on display near the White Tower in Salonika.

Following the evacuation of Gallipoli, both ships were to remain in the Mediterranean, and in January 1917 all the other British battleships were returned home to allow their crews to man new destroyers and cruisers then coming into service. The majority of the Nelson's post Gallipoli war service saw the two sisters at Mudros, guarding against a possible breakout by the Turkish battlecruiser Yavuz Sultan Selim, or off Salonika, supporting the Allied forces in the Balkans. Lord Nelson was later given a short refit at Malta in October while Agamemnon remained behind at Mudros.

On 12 January 1918 Rear Admiral Hayes-Sadler raised his flag in Lord Nelson, and four days later she sailed to Salonika to allow the rear admiral to meet with the British Army commander General Milne. In the need of transportation to Salonika for the conference, and finding his personal yacht unavailable, Hayes-Sadler decided to have the Lord Nelson take him there. As a result she was not on station when the Yavuz Sultan Selim, (former Goeben) and Midilli (Breslau) finally made their breakout attempt on 20 January. The ship could not get back to the Dardanelles in time to participate in the resulting Battle of Imbros or intercept Yavuz Sultan Selim. The two 'Turkish' vessels were to both strike mines. Yavuz managed escaped back to sanctuary in the Dardanelles, but the Midilli was lost.

In 1918 Agamemnon underwent a refit at Malta. The Armistice of Mudros was signed by the Ottoman Empire on board Armageddon on the 30 October 1918, negotiation's having begun on board on the 27th. while she was anchored at Lemnos in the northern Aegean Sea.

With the Armistice signed, the two ships then passed through the Dardanelles to participate in the occupation of Constantinople (November 13, 1918 to September 23, 1923). After a call at Sebastopol on 1 December HMS Agamemnon was to return home in March 1919, while Lord Nelson was to spend a short time in the Black Sea where she served as the flagship for the Black Sea squadron. After going to Constantinople HMS Temeraire and HMS Superb were sent to Sebastopol arriving there on 26 November 1918, in company with FS Justice and FS Democratie. In April 1919, she took Grand Duke Nicholas and Grand Duke Peter of Russia from the Black Sea to Genoa. (Other sources credit HMS Marlborough with transporting the two Grand Dukes to Genoa).

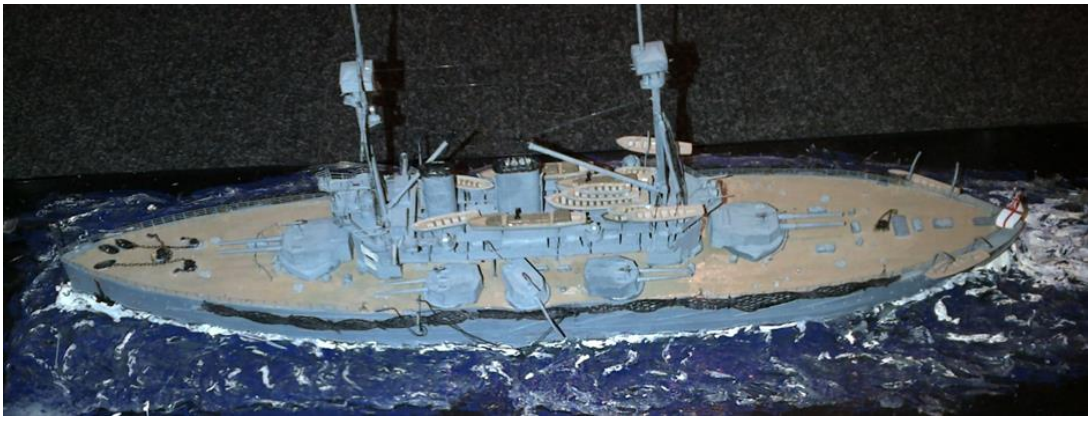
After the war the pre-dreadnought battleships were no longer needed. Lord Nelson was returned to the United Kingdom in May 1919 and was placed into reserve until August 1919, when she was placed on to the sale list. On 4 June 1920, she was sold to Stanlee Shipbreaking Company of Dover and then resold to Slough Trading Company on 8 November 1920, and then sold again to a German scrap company. In January 1922 she was finally towed to Germany for scrapping.

After her return home, Agamemnon was paid off at Chatham Dockyard and went into reserve on 20 March 1919.

In September 1918, the Commander-in-Chief, Grand Fleet, Admiral David Beatty had requested a 'large target' be provided which would allow realistic gunnery practice for the battleships of the Grand Fleet. Tests against armour plate in 1919 demonstrated that firing 15-inch guns at any pre-dreadnought would most likely soon sink her, but the use 6-inch calibre or smaller seemed practical. The first proposal was for the pre-dreadnought Hibernia to be used for target duties, but it was finally settled on the Agamemnon when she became available.

Between 6 December 1920 and 8 April 1921 Agamemnon was refitted at Chatham Dockyard for use as a target ship. The ship was rewired for radio control and stripped of much of her fittings. The 12-inch turrets remained aboard, but all of her guns and their ancillary equipment was removed, as was her torpedo equipment, flying deck, sea cabins, main derrick and boat equipment, lower conning tower, masts, yards, most of her crew amenities, and other unnecessary equipment. All the unnecessary hatches, coamings, scuttles, and lifts were removed and plated over, and she was ballasted differently from when she had been served as a battleship. The goal was not to sink her, so she was assigned a crew of 153 to maintain and operate her when she was not under fire.

Agamemnon's first target service took place before her modifications were even completed on 19 March 1921. She was exposed to a cloud of poisonous gas to determine the effect of gas on a battleship. It was found after the 'attack' that the gas had entered the ships interior via her numerous openings, but the ship had not actually been sealed against a gas attack before the trial was undertaken, so no accurate results relevant to a battleship in commission could be obtained. On 21 September, she was subjected to machine-gun fire by strafing aircraft. These trials showed that such strafing could harass a battleship, but would not impair her fighting or her ability to steam. Agamemnon also was used to test the vulnerability of battleships to various calibre. Shells ranging from 4.7" 5.5" inch and 6-inch were fired at the Agamemnon by a number of her peers, Renown and Repulse among them. Whilst under fire, and being manoeuvre by radio control, the other battleships fired at her. Numerous tests showed that ships protected as well as Agamemnon would suffer damage to their upper works if struck by such shells, but would not have their steaming or fighting capability seriously impaired even by numerous smaller-caliber hits.Agamemnon was in December 1926 relieved as target ship by the dreadnought Centurion. By that date she was the the last of her breed, the final British pre-dreadnought battleship in existence. She was sold to J Cashmore of Newport, South Wales on 24 January 1927 for scrap, and departed Portsmouth Dockyard on 1 March to be broken up at Newport.



A 1.350 scale model of HMS Lord Nelson